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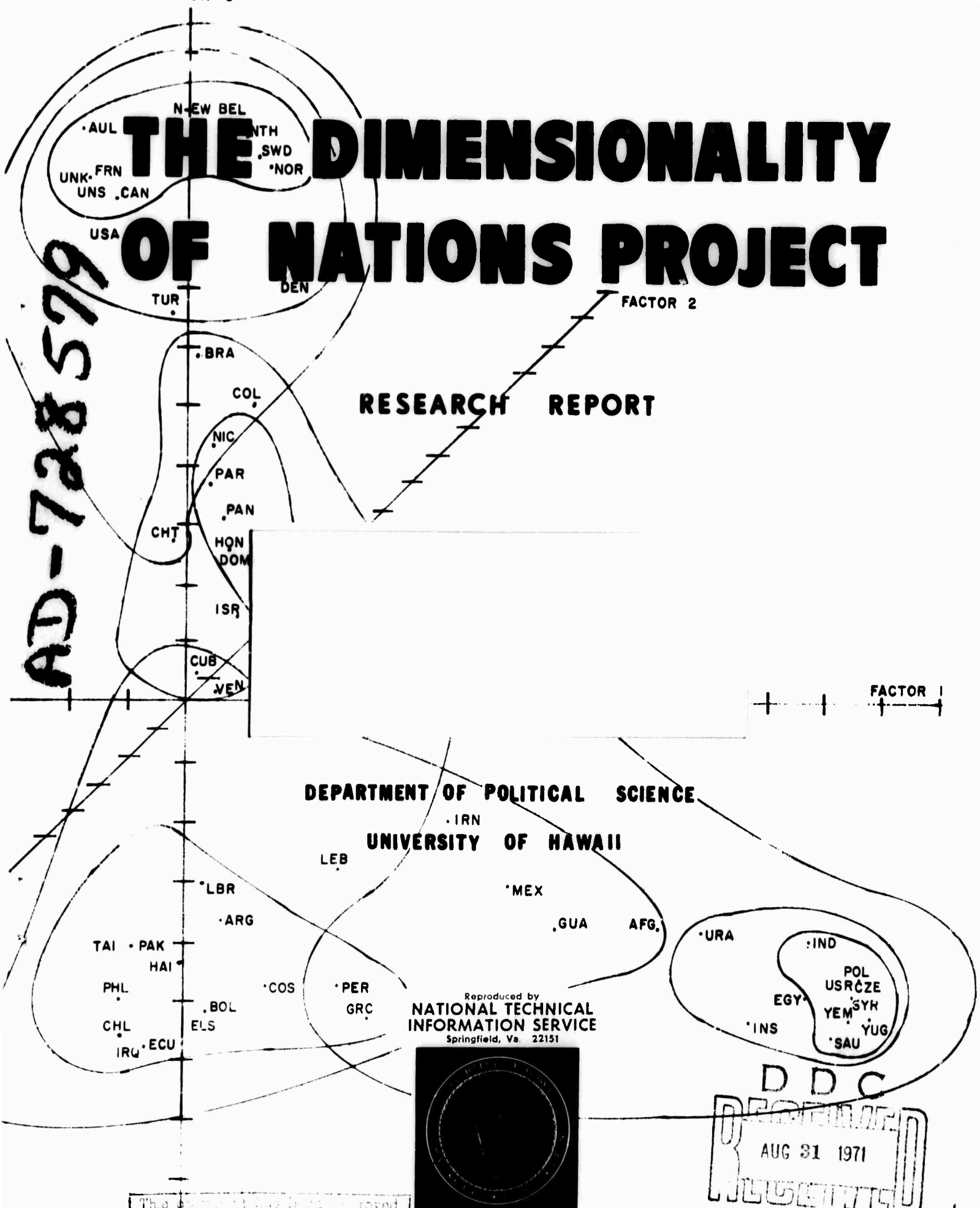
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RESEARCH REPORT NO. 50

A STATUS-FIELD THEORY OF
INTERNATIONAL RELATIONS

R. J. Rummel

August 1971

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<p>Two theories, among others, currently invigorate theoretical and empirical international relations research. One is field theory, based on the idea that nation similarities and differences cause international behavior. The other is status theory, derived largely from the sociological status literature, which argues that international behavior is caused by status rank and disequilibrium.</p> <p>Both theories ground behavior on nation attributes, thus providing an avenue for subsuming status theory within field theory. First, among the many dimensions spanning nation attributes, two--economic development and power basis--can be defined as status dimensions. These position nations on their relative statuses in field theory's attribute space.</p> <p>Second, status theory's two key concepts--rank and status disequilibrium--can be defined for nations by status dimensions and, most importantly, for dyads by nation status differences (distance vectors). This latter definition is the implement used to create status-field theory, since for field theory, distance vectors are the forces toward behavior.</p> <p>Finally, status and field theory can be combined to say that status dependent, dyadic, cooperative, and conflict behavior of economically developed nations is inversely related to their power differences; and that such behavior of economically underdeveloped nations is inversely related to their economic development differences.</p> <p>The development of a status-field theory enriches both theories. Status theory is given a mathematical representation with clear functions and tests. Moreover, status-field theory explicitly considers status and status behavior as being related to other behavior and attributes.</p>			

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THE DIMENSIONALITY OF NATIONS PROJECT
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A STATUS-FIELD THEORY OF INTERNATIONAL RELATIONS

by
R. J. RUMMEL

ABSTRACT

Two theories, among others, currently invigorate theoretical and empirical international relations research. One is field theory, based on the idea that nation similarities and differences cause international behavior. The other is status theory, derived largely from the sociological status literature, which argues that international behavior is caused by status rank and disequilibrium.

Both theories ground behavior on nation attributes, thus providing an avenue for subsuming status theory within field theory. First, among the many dimensions spanning nation attributes, two -- economic development and power basis -- can be defined as status dimensions. These position nations on their relative statuses in field theory's attribute space.

Second, status theory's two key concepts -- rank and status disequilibrium -- can be defined for nations by status dimensions and, most importantly, for dyads by nation status differences (distance vectors). This latter definition is the implement used to create status-field theory, since, for field theory, distance vectors are the forces toward behavior.

Finally, status and field theory can be combined to say that status dependent, dyadic, cooperative, and conflict behavior of economically developed nations is inversely related to their power differences; and that such behavior of economically underdeveloped nations is inversely related to their economic development differences.

The development of a status-field theory enriches both theories. Status theory is given a mathematical representation with clear functions and tests. Moreover, status-field theory explicitly considers status and status behavior as being related to other behavior and attributes.

For field theory, status-field theory adds substantive richness and defines the direction of relationship between two attribute dimensions and behavior. This makes salient for field theory extensive sociological literature and includes under one umbrella two empirically active and systematic international relations theories.

A STATUS-FIELD THEORY OF INTERNATIONAL RELATIONS¹

R. J. Rummel

Out of uninterpreted sense-experiences science cannot be distilled, no matter how industriously we gather and sort them. Bold ideas, unjustified anticipations, and speculative thought, are our only means for interpreting nature: our only organon, our only instrument, for grasping her. And we must hazard them to win our prize. Those among us who are unwilling to expose their ideas to the hazard of refutation do not take part in the scientific game. (Popper, p. 280)

Two grand international relations structural theories have been developed in the last decade: status theory (Lagos, 1963; Galtung, 1966b, 1966c) and social field theory (Rummel, 1965, 1969b, 1970c). Both treat international relations as a social system in which interaction is a consequence of social forces. For status theory, the stratification system provides the context for behavior and status, the force. For field theory, differential attributes are the context and the forces are attribute (social) distances.

Field theory has an explicit axiomatic and mathematical structure specifying the form of relationship between international behavior and attribute distances, but not the direction of relationship. That is, although postulating how behavior links to attribute distances, field theory does not indicate which specific behavior is a consequence of

¹Prepared in connection with research supported by the Advanced Research Projects Agency, ARPA Order No. 1063, monitored by the Office of Naval Research, Contract No. N00014-67-A-0387-0003. My sincere thanks to Larry Alschuler, Nils Petter Gleditsch, George Kent, Warren Phillips, Richard Van Atta, and Michael Wallace for careful comments and specific suggestions on a prior working draft of this paper. Of course, they bear no guilt by association for this final draft.

particular positive or negative attribute distances. Field theory therefore appears a mathematical skeleton, somewhat barren of substantive meaning and implications.

By contrast, status theory seems substantively rich in application. Behavior's correlation with status is often specified, enabling theoretical discussion of specific international questions such as East-West summitry (Galtung, 1964b) or disputes before the International Court of Justice (Jarvad, 1968). Although an axiomatic base is given (Galtung, 1966c), it is not articulated within a mathematical system; the functional relationship between status measures and interactions is not given. Consequently, status theory cannot easily be treated deductively.

A natural question is then whether field theory and status theory can be unified. Since the "failings" of each are apparently the strengths of the other, combining them would make a better theory of international relations. This paper will show that there is a positive answer and that the two can be united by imbedding status theory in field theory's mathematical structure: status theory will be a special case of field theory.²

²This paper is the third relating field theory to other international relations theories and frameworks. The first (Rummel, 1969a), showed that what I call attribute theory (the theory that a nation's behavior, such as total exports, total threats, etc., can be explained by its characteristics, like economic development) is mathematically dependent upon one field theory model.

The second paper (Rummel, 1970d) incorporated several theories and hypotheses within field theory, used attribute distances to operationalize them, and tested the result on U.S. foreign relations data. The theories and hypotheses thus incorporated were Rosenau's "pre-theory," Organski's power transition theory, Wright's distance theory, Russett's integration and regionalization hypotheses, Galtung's status theory, and hypotheses about geographic distance. The status and field theory relationship was only outlined specifically for the U.S. This third paper is meant to treat the incorporation of status theory in general and in detail.

Unfortunately, the lack of a mathematical model for status theory eliminates the easiest unifying route, which is logically deducing status theory from field theory. Another way, and the path I will follow, is showing that field theory with status interpretations added makes the same status dependent international predictions as does status theory alone.

This entails the following development. The field theory axioms will be given successively, adding at appropriate points status theory axioms without violating the sense of either theories. Of course, proper transformation of definitions and propositions always can unify two diverse theories. However, by such transformation the theories may become unrecognizable. This danger will be avoided here by enveloping (so to speak), and not transforming, the definitions and propositions customary to status theory.

Technically, combining status and field theory axioms means that both theories are altered: we no longer have the same theories axiomatically, but a hybrid. However, like the yearly Volkswagen changes which leave the basic automobile unaltered, amalgamating status and field theory axioms will not alter field theory's metasociological assumptions, structure, nor driving forces (attribute distances). Nonetheless, combining the two constrains status theory within the field theory mathematical model and operationalizations, and attaches to it field theory's metasociological assumptions about social space, relative values, simultaneity of causation, social time, and attribute distances. For this reason, the development will imbed status theory in field theory.

However, for those who have become familiar with field theory as previously developed (Rummel, 1965, 1969b), to call the combination theory

"field theory" would create confusion about the variant of field theory to which the noun refers. Accordingly, the hybrid theory henceforth will be called status-field theory.

Before this task is undertaken, brief summaries of the two theories might help.

OVERVIEW OF FIELD THEORY

Field theory assumes, first, that international behavior and attributes form a social space -- a field of complex and changing interrelationships between nations, their characteristics, their behavior. Isolating a particular variable or two is not sufficient to understand behavior, then. Rather, the whole field must be specified to provide the context and causal environment of interaction. For example, knowledge that a country with a left democratic government is poor and Catholic will not generally be sufficient to explain a nation's international behavior. These characteristics have different behavioral consequences depending on their distribution in the system, behavioral expectations and norms, and on who is the behavioral object.

Second, absolute characteristics are assumed outside of a nation's behaviorally relevant field and it is assumed that the principle of relative values governs nations: attributes and behavior must be understood by their interrelations, comparatively. Behavior cannot be explained in isolation and a nation's attributes become relevant only in relation to other attributes and to behavior.

Third, social time is assumed to be part of the international relations social space -- the field. Nation behavior and attributes have

extensional and durational relationships; the passage of time is relative to the nation and the context.³

Finally, nation attribute similarities and differences are field forces creating social-time space motion: attribute distances between nations cause international behavior.⁴ Thus, for field theory, a sociological construct -- attribute distance -- is a basic force.

The above notions can be summarized into three axioms.

1. International relations is a field consisting of all nation attributes and interactions and their complex inter-relationships through time.
2. The international field comprises a Euclidean attribute space defining all nation attributes and a Euclidean behavior space defining all nation dyadic interactions.

³The concepts of social and relative time can receive little attention within this paper's scope. For their consideration in the field theory context, see Rummel (1970c).

⁴To many, this phrasing may appear as jargon, as another mechanical and scientific importation into social sciences of natural science terminology, as a naive pursuit of physics success. In well-informed and soundly directed critiques, Sorokin (1956, 1964) has showed how ridiculous such efforts are, if the primary concern is to understand human relations. Although at first glance, status-field theory may seem to exemplify the worst of the social physics and mechanistic schools in sociology, careful reading should soon show that all of Sorokin's major criticisms have been met. For example, (1) the theory is deductively elaborated, (2) terms and concepts are introduced only as needed and then tied to social phenomena, (3) measurement and testing procedures are built into the theory so that its theorems can be tested, (4) the problem relevant historical and contemporary literature (rather than method relevant) is taken into full account, (5) and the intuitive and meaningful social context is considered regarding every aspect of the theory. Like Sorokin, I believe that reality is comprehended best through a combination of intuition-imagination-insight, reason, and sensory perception. Status-field theory manifests this belief.

3. The attribute distances between nations in attribute space at a particular time are social forces determining the location of dyads in behavior space at that time.

These three are reduced from the original seven axioms (Rummel, 1965) of field theory. Since their initial publication, empirical (Rummel, 1969b, 1970d) and theoretical work (Rummel, 1969a, 1970c) have shown an interdependence (redundancy) among axioms which, along with some changes in wording, permitted the reduction of the number to the three given here. These three now define field theory and are the ones to which those from status theory will be added, forming the status-field theory.

OVERVIEW OF STATUS THEORY

Like field theory, status theory also postulates a basic behavioral force: an individual or a nation's status. This is not to claim there is one explicit status theory. The sociological literature is not coherent and consistent about status, its definitions, and its behavioral and psychological consequences.⁵ Moreover, those applying status theory -- a sociological theory -- to international relations have given it new concepts and notions, some having an ad hoc flavor. Consequently, this paper will deal with what appears to be the main status theory stream running through the sociological and international relations literature, beginning as a trickle with Marx and Weber, running as a tributary through the works

⁵For an overview of the literature and its content, see MacRae (1953-4), Pfautz (1963), and Glenn, Alston, Weiner (1970).

of Bendix, Davis (Kingsley), Homans, Lipset, Merton, Sorokin, and Veblen; and finally as the major stream in the ideas of such contemporaries as Galtung, Gleditsch, Heintz, Jackson, Lagos, Lenski, Mills (C. Wright), Schwartzman, and Zelditch.

Generally, all social systems are conceived as stratification systems based on the division of labor and differential social characteristics. Stratification is an ordering of individuals or nations on some esteemed, desirable characteristic and an individual's position in this ordering is his status. Contemporary sociologists consider the major status characteristics of societies as wealth (or privilege), power, and prestige; a person's wealth, power, and prestige comprise his statuses and his combined wealth, power, and prestige measure his total status -- his rank -- in society.

Upon this definitional base, and assuming individuals or nations wish to improve their status, two basic behavioral propositions have been argued and tested extensively. The first is that individual or nation interactions increase as a positive function of their rank. High status individuals or nations interact more with others than do low status individuals or nations, and low status individuals or nations direct behavior upward in the status hierarchy.

The second proposition is that status disequibrated individuals or nations -- those high on some statuses and low on others -- will be frustrated and under stress, potentially leading to internal or external conflict. The group of disequibrated individuals is a pool of potential suicides, radicals, aggressors, or innovators.

Although many elaborations of status theory exist,⁶ the above propositions and definitions constitute the empirically tested core to be imbedded in field theory. For this purpose, six status axioms are necessary.

- (1) International relations is a stratified social system.
- (2) Some behavior dimensions are linearly dependent on status.
- (3) Status behavior is directed toward higher ranking nations and the greater a nation's rank, the more its status behavior.
- (4) High rank nations support the current international order.
- (5) Nations emphasize their dominant status and the others' subordinate status in interaction.
- (6) The more similar in economic development status, the more nations are mutually cooperative.

Status-field theory, then, is the result of combining the above with the three aforementioned field axioms.

The remainder of this paper will join these two sets of axioms, pose the required definitions, and derive the theorems applicable to international behavior. Appendix I gives an overview of the complete development.

THE STATUS-FIELD SPACE

The first axiom of status-field theory is as follows.

Axiom 1 (Status-field Axiom): International relations is a field

⁶For example, see Gleditsch (1970, 1970a) and the Berger, Zelditch, and Anderson (1966) collection of papers, especially the excellent synthesis of many status concepts and theoretically innovative efforts of Galtung (1966b, 1966c). The brilliant contribution of Galtung can be seen by comparing his work against the status literature, generally.

consisting of all nations, their attributes and interactions, and their complex interrelationships through time.

The major assumptions embodied in this axiom have been discussed. Some clarification, however, is still needed.⁷ An attribute is any description differentiating nations, like GNP, population, and area. Behavior, however, is defined as any action of one nation toward a specific other nation, which then couples the two. Thus, the exports of Peru to Bolivia is an action coupling them. Two such nations form a dyad and the action involved is dyadic behavior. Therefore, the dyadic behavior of the U.S. to the U.S.S.R. is not necessarily the same as the U.S.S.R. to the U.S.

The second status-field theory axiom defines more specifically the nature of this space.

Axiom 2 (Attribute-behavior Space Axiom): The international field is a Euclidean attribute space defining all the attributes of nations and a Euclidean behavior space defining all nation dyadic interactions.

This axiom implies that both attribute and behavior are spaces with all the mathematical properties of a vector space of real numbers.⁸ By Axiom 2, such mathematical concepts as dimension, basis, linearity, dependence, and transformation with associated theorems can be utilized to structure further the theory and its deductions. In other words, the status-field theory can be imbedded in linear algebra. Moreover, and

⁷Portions of the discussion on the field theory axioms is reproduced from Rummel (1969b).

⁸These axioms are visually rendered in my 1965 paper. I feel strongly that status-field theory cannot be fully understood without a picture -- a geometric representation -- of what is involved. For me, at least, the theory gains much power by this ability to be portrayed visually.

most important, since multivariate techniques like multiple regression, canonical analysis, and factor analysis involve linear algebraic models, Axiom 2 plus the other axioms provide the methods to operationalize and test the primitives and deductions of status-field theory.

These axioms are abstract and elevate status-field theory above substantive international relations concepts. The abstract structure of the theory can encompass a substantive interpretation, however, such as the partial conceptual framework shown in Figure I. In outline and content this framework is an initial sketch: the relationships (arrows) are not completely given, some concepts have yet to be added, and the empirical concepts have yet to be identified with empirical international behavior dimensions (as described under the next axiom). But, the framework provides some idea of how status-field theory relates to current international relations concepts and may encourage initial discussion of this relationship.

As shown in the figure, the social-time field encompasses nations, their attributes, their behavior.⁹ In attribute space (A-space), nations move in ever changing swarms and configurations of social-time points, with each nation's differences from and similarities to other nations locating it at a particular social-place-time. Dyadic distances¹⁰ position nations

⁹"It is submitted that the conception of the world as a field can provide the most objective frame of reference for analyzing the entities, processes, forces, and relations involved in international affairs; can best synthesize the conceptions of the world as plan and as equilibrium; and can best indicate the complementarity of these conceptions to those based on the beliefs and activities of the many who view the world as potentially an organization or a spiritual community." (Wright, 1955, p. 539)

¹⁰These are distances between nations spatially positioned by their differences and similarities. Therefore, these distances are attribute distances, or what Deutsch and Isard (1961) called functional distances.

SOCIAL SPACE

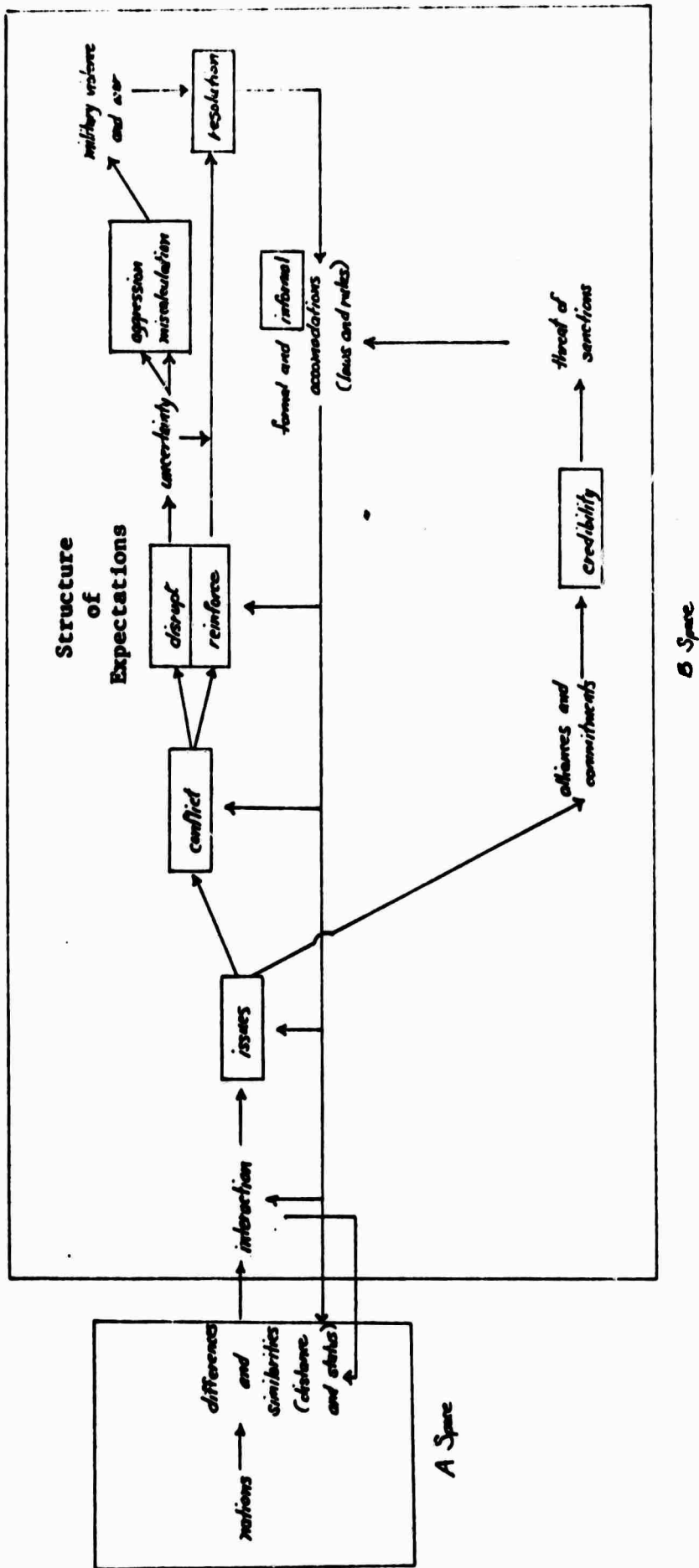


Figure 1

relative to each other and define, we will see later, their status differentiation.

Attribute space thus embodies each nation's changing geographic, social, cultural, economic, and political character relative to other nations and through time. Axiomatically, international behavior is explained by these nation attribute-space positions (which is to say, relative nation differences and similarities). Thus, Figure I shows an arrow from attribute-space to behavior space (B-space) and nation interactions within it. Of course, feedback from interaction to A-space exists also. For example, the large migration to the U.S. of Cuba's middle and upper class after the Castro revolution affected her population total and profile, and economy. And status also is partly related to the character of a nation's interaction.

Behavior space comprises all national behavior, which are conceptually ordered by Figure I. Those in boxes are conceived as bridge (or theoretical) concepts, connecting concepts for which definition and measurement are provided.¹¹

¹¹The concepts in the boxes are constructs; the other concepts are observables. Willer and Webster (1970) have published an insightful article on this distinction and sociological theory. They argue that sociological theory's development has been retarded by reluctance to move beyond observables. "In other words, sociology has shown so little progress towards establishing a cumulative body of knowledge because most sociologists have been content to record their observations in concrete terms, to make precise statements about the things which are observed, rather than making statements about abstract constructs which may be observationally interpreted in concrete instances." (p. 756) This comment applies to political science theory and frameworks as well. Regarding my particular concern -- the behavior and attribute linkage -- and in Rosenau's (1969, p. 4) words, "political science as an intellectual discipline has yet to develop theoretical constructs for explaining the relations between the units it investigates and their environments."

On constructs in the natural science, see Margenau (1950). For a complementary point of view based on studies of a language's growth, see Bronowski and Bellugi (1970).

The B-space framework treats international relations as a conflict system, as is customary in traditional studies.¹² Conflict is both a mechanism of changing attributes and behavior¹³ and an indicator of the need for such change.

At the left of the figure's B-space are causally related international behaviors. Interaction (treated as dyadic and directed in status-field theory) leads to various issues between interacting nations. These may be over administration and regulation of their interaction, as with tourists, migrations, and trade, or they may be profound political questions fundamental to a nation's survival, like arms control or disarmament. Issues either lead to conflict or to alliances and commitments. Conflict, as a situation, results from disagreement over how issues should be resolved (such as over Japanese textile exports to the U.S.).

Interaction and conflict through time build up a structure of expectations between nations. The metaphor of the family might help to clarify this construct. Initially within a new marriage there is much conflict which reflects a working out of the minor, and sometimes major, issues arising through increasing familiarity between mates. Through this conflict each develops a knowledge of the other enabling mutual predictions of their behavior, needs, and desires. In other words, mutually realistic expectations are developed, permitting continuous and fairly harmonious interaction. They each have adjusted.

¹²The traditional view is exemplified by Hoffmann (1965). Interestingly, Burton (1969), who wishes to overthrow the traditional international relations power model, begins his attack by adopting the traditional conflict perspective.

¹³Although having a modern ring, this idea goes back at least to Heraclitus of Ephesus, the pre-Socratic Greek philosopher. See Durant (1966).

A similar structure exists among nations. The Cold War between the U.S. and U.S.S.R. can be seen as the gradual and painful development of an ability to coexist. Much conflict, the consequences of many wrong perceptions, and numerous false predictions have evolved a structure of expectations between the two major powers; the cold war's de-escalation is an indicator of such a realistic set of expectations existing (in the same way as the decreasing conflict in the second and third year of marriage indicates increasing adjustment).

Conflict, as the figure shows, will disrupt or reinforce the structure of expectations. It can reaffirm the mutual expectations of nations or call for minor adjustments in these expectations, as with the Japanese-American Okinawan conflict in the late 1960s. The outcome reaffirmed the Japanese view of the U.S. as being predominantly security conscious, but conceding political control over territory if that security were not seriously compromised, and being responsive to Japanese interests and opinions. On the other hand, reinforced was the U.S. contemporary perspective on Japanese policies as sensitive to U.S. security interests. That conflict which reinforces existing expectations is resolved without much conflict behavior (although there may be some antiforeign public demonstrations, an occasional low key accusation, or a diplomatic protest).

Conflict which disrupts the structure of expectations, however, provides the breeding ground of violence. A case in point is the Cuban Missile Crisis. Both sides had mutual expectations quite at variance with actual behavior. The Soviet Union did not anticipate the American "brinkmanship" response. Previous American behavior and a Soviet "reading" of President Kennedy suggested much American rhetoric and desk pounding, but

avoidance of action risking a nuclear or conventional military Soviet-American confrontation. And Americans thought it was against the Soviet grain to implant "offensive" missiles in Cuba. To risk so obviously a direct American confrontation was deemed an incredible possibility, before concrete evidence accumulated to prove that, indeed, the incredible had occurred.

Thus, we had the grave uncertainty of the first crisis days. Disrupted expectations of Soviet strategic behavior in the Western Hemisphere led to a great questioning and reassessment of expectations about her behavior and goals in Berlin, Southeast Asia, and elsewhere. This reassessment, this uncertainty about former "understandings" and implicit rules, made predicting the other's responses or assessing past and present behavior problematic. Using again the family metaphor, few events compare to a mother-in-law's protracted visit or arrival of a new baby in disrupting a couple's structure of expectations. The new situation demands expectations be restructured and in the process tremendous overt conflict can occur, threatening the marriage's very existence.

Uncertainty resulting from disrupted expectations may cause conflict behavior, such as expulsions or recalls of diplomats, threats, boycotts, severance of diplomatic relations; or warning and defensive actions may ensue, like alerts, cancellation of military leaves, troop movements, and so on. Uncertainty and such actions can lead, in their cumulative effects, to either side miscalculating and stumbling into war. The events and decisions leading to World War I provide a powerful historical example of this process. The events leading to the Japan-American Pacific War in 1942 is yet another example.

Thus, as the figure shows, interaction leads to issues, possibly disrupting international expectations, causing uncertainty which, through miscalculation or preemptive aggression, can result in military violence and war. Such violence and war generally resolves the underlying uncertainty. Resolution does not imply victory for one side nor even an end to the conflict causing the violence. Rather, a resolution (as for the Korean War) occurs when nations involved in the conflict develop a realistic understanding of their mutual goals, behavior, and limits, and a willingness to live within the existing distribution of territory, resources, power, and benefits. That is, resolution means developing realistic expectations.

Expectations will be reinforced or disrupted by conflict.¹⁴ Either event eventually leads to formal and informal international accommodations, where formal accommodations comprise treaties, conventions, executive agreements, protocols, and other such codifications of international arrangements. Informal ones involve the explicit, but unwritten, agreements and the implicit rules and understandings governing international relations. Implicitly understood is the use of U.S. and Soviet satellites for military surveillance (a systematic implementation of Eisenhower's open skies plan which Khrushchev strongly opposed). Implicitly understood during the Korean War was that South Korea and Japan were off limits to the North Korean and Chinese Air Force. Implicitly understood was that South America was to be out of bounds to a Soviet military presence (the violation of this understanding created the Cuban Missile Crisis). And, implicitly understood is that Eastern Europe is a similar sphere of Soviet influence.

¹⁴Expectations, of course, are also reinforced by their being satisfied, i.e., by leading to satisfactory predictions of behavior.

Whether formal or informal, and regardless of content, as the figure shows, these accommodations contribute to the structure of expectations and influence the interaction patterns, issues arising from interaction, and the resulting conflict. Significantly, these accommodations can alter nation characteristics, such as political territory (as with the United Kingdom and the various accommodations relating to giving her colonies independence), economic, demographic, and political attributes (as the North-South division of Korea), or a population's ethnic composition (as with Israel).

Interaction and accommodations are therefore feedback from international behavior to attribute space influencing a nation's social space-time location and, therefore, national similarities and differences. Noted theoretically, this feedback is not included in status-field theory's axiomatic formulation. When imbedded in field theory's mathematical framework, the one way causation from attributes to behavior should be sufficient to capture the behavioral variance associated with this feedback.¹⁵ While feedback can be recognized conceptually, including it mathematically in status-field theory is redundant.

Again considering Figure I, so far only one of two issue consequences has been discussed. Besides causing conflict, issues also create alliances and commitments, such as NATO, ANZUS, the Warsaw Treaty Organization, The League of Arab States, etc. An alliance is any multilateral treaty pledging military aid under certain circumstances. A commitment is a written, verbal, or understood bilateral agreement by one country to militarily aid or support another.

¹⁵This is a theoretical assumption of status-field theory, whose validity will rest on the theory's empirical fit.

Alliances and commitments structure international power arrangements and help make credible the possible use of sanctions and force. But merely an alliance or commitment does not assure that one nation will, indeed, aid another. For alliances and commitments to be credible, those involved must have a history of honoring such commitments. Ambiguity about a nation's resolve to use force or apply sanctions as threatened leads other nations frequently to test this resolve.

Alliances and commitments institutionalize the threat of force and sanctions. This threat and its credibility undergird accommodations between nations. Here, municipal law furnishes a sound metaphor. The accommodations reached through society's large and small crosscutting and schismatic conflicts provide that society's laws. Fundamental to such a social structure of expectations (or habits) and laws is the threat of sanctions if laws are disobeyed. Similarly, formal and informal international accommodations are the system's laws, and their violation risks either unilateral or multilateral sanctions. Unlike municipal laws, however, the sovereign and individual nations judge violations of their accommodations and apply the sanctions. Therefore, threats of force and sanctions are not simply "aggressive" or "hostile" international behavior. Rather, it is behavior designed to maintain accommodations, provide credibility, and back commitments.

To summarize, although the first two status-field theory axioms (defining attribute and behavior spaces) appear to be far removed from international relations substance, these axioms envelop a comprehensive conceptual international relations framework understandable to (I would rather say

"persuasive to") and with utility for practitioners and students. With this in mind, we can proceed to the first theorem.

Theorem 1 (Finite Dimensionality Theorem): A finite set of linearly independent dimensions generate attribute and behavior spaces.

This finite dimensionality follows from the finite nature of the social space-time population of nations. Each space can be represented by a coordinate system: each nation at a point in time is an attribute space coordinate; each dyad at a point in time is a behavior space coordinate. The infinitude of attributes and behaviors then have projections onto the nation or dyad axes which locate them in this social space-time.¹⁶ Therefore, since these coordinate axes are finite in number, there also must be a finite number of linearly independent dimensions.

So far, attributes and behavior are vectors in a social space-time, defined by a set of linearly independent dimensions. The theorem's power lies in its definition of a finite set of dimensions capturing all independent nation variation along, potentially, an infinite number of attributes (like area, national income, or defense budget) and behaviors (like exports, threats, and foreign mail), and in also capturing all nation variation along the infinite linear combinations of these attributes and behaviors. Thus, if X_j and X_k are attribute space vectors such as population and GNP, then any vector $X = \alpha_j X_j + \alpha_k X_k$ (where α_j and α_k are any real number scalars) is also an attribute space vector, along which nation variation is defined by the theorem's linearly independent dimensions.

¹⁶Unfortunately I cannot elaborate on these concepts here and show that they have precise mathematical-geometric interpretation and empirical referents. See Rummel (1965, 1969b, and especially 1970c).

The dimensions generating each space are a basis of the space, and this concept will tie international behavior to nation attributes. By Theorem 1, any attribute or behavior space vector is linearly dependent on the space's basis. Therefore, if X is an attribute and S_1, S_2, \dots, S_p are a p dimensional basis of attribute space, then $X = \alpha_1 S_1 + \alpha_2 S_2 + \dots + \alpha_p S_p$. Now, if behavior Y is linked to any attribute X , such that $Y = \gamma X$ and γ a scalar, then $Y = \gamma (\alpha_1 S_1 + \alpha_2 S_2 + \dots + \alpha_p S_p)$.

In other words, if a behavior is dependent on any attribute or linear attribute combination, then it is dependent on the attribute space basis. Therefore, if linking behavior to attributes is our theoretical purpose, we need not conjecture about the infinitude of attributes. Rather, we should speculate about the finite dimensions.

Now, these dimensions place nations in attribute space, and thus delineate their similarities and differences. However, considering the behavior space dimensions and the framework of Figure I, how do these dimensions embody the interrelated concepts describing international relations? The behavior space dimensions embody the cluster or pattern of actions associated with each concept presented there, excluding the constructs. Each concept reflects one or more empirical behavior dimensions; together, the dimensions encompass international behavior, behavioral relationships, and the interbehavioral causal influences.¹⁷

¹⁷Attempts to delineate empirically reliable behavior space dimensions for 1955 and 1963 have been published (Rummel, 1969b, 1970b). Those dimensions appearing for both years are Deterrence (military action and negative communications), Diplomatic, Cold War, International Organizations, UN Voting Agreement, Negative Sanctions, Exports (relative), Students, Migrants, and Saliency (involving such behavior as book exports, total exports, conferences, and tourists). Although the conceptual framework can readily include these dimensions, they are still cross-sectional dimensions (delineated as points in time). Relating them to the conceptual framework should be postponed until it is determined whether they also exist through time.

Returning to our major concern, the two status-field theory axioms and Theorem 1 now enable us to deal with status theory. More explicitly, the first status axiom to be added is:

Axiom 3 (Stratification Axiom): International relations is a stratified social system.

All social systems are stratified.¹⁸ All have status structures

¹⁸For a functional explanation basing stratification's universal presence on the distribution of abilities and rewards, see Davis and Moore (1945). Sorokin presents a different explanation in terms of the hierarchization of authority or of rights and duties (1947, especially p. 278) and, ultimately, the heterogeneity of individuals (Sorokin, 1964, p. 57). See also Kaufman, et al. (1953, pp. 22-23). Both these explanations account for stratification by specialization (Allardt, 1968). Another view is that stratification results from a power struggle. See, for example, Weber (1966, p. 21). This view could well explain international stratification by traditional power-oriented international relations theories.

There is a difference in perspective on status between anthropologists and sociologists. According to Smith (1966), while "anthropologists conceive stratification concretely, as a feature of some, but not all, societies, sociologists tend to stress its universality as an abstract necessity of all social systems, whether these are conceived analytically or not. Underlying these differing orientations is the anthropologists' emphasis on status as the primary concept for analysis of social structure, and the sociologist's emphasis on role. I suggest that this difference also explains why sociologists are keenly concerned with a theory of stratification, while anthropologists are little concerned about it. Because anthropologists conceive social structure as a status structure, in their view an inclusive theory of stratification would represent a general theory of all forms of social structure. On the other hand, because sociologists regard societies as systems of roles, they need a theory of stratification to analyze the articulation of these roles."

Further, according to Smith, not all social structures are stratified. As I understand his argument, those societies which are politically decentralized have coincident political and status structures. The "units of public order and regulation are ... related by the same principles that regulate the distribution of status." (pp. 173-4) These are headless societies resting "on general normative consensus." While Smith agrees that all social systems can be status systems, he prefers to consider "stratification" as uniquely social. Thus, where political and status systems coincide, there is no unique social ordering and thus no stratification.

Smith therefore would consider international relations as a status system, but not stratified since (as will be argued throughout this paper) political and status systems do overlap considerably and international relations is acephalous. This is a difference that makes a difference, since it is the very fact that international social status and political structures overlap that will enable us to make political observations and generalizations on the basis of a social status theory. However, sociologists generally use "stratification" only to mean the presence of a status system, and this is what I have done here.

and layer individuals (or nations) sharing similar ranks--the same class.¹⁹ "Every known human society, certainly every known society of any size, is stratified." (Berelson and Steiner, 1964, p. 460) "Any organized social group is always a stratified social body." (Sorokin, 1927, p. 12) Moreover, the degree of stratification (in terms of inequality and hierarchization) is greater, the larger the size of the group (Sorokin, 1927, p. 85; Svalastoga, 1965, p. 6). And stratification increases with the heterogeneity of the members (Sorokin, 1927, p. 85), implying that the international system is a highly stratified system.

If international relations is a social system (since international relations has a distinct culture, nation-states as distinct social units, continuous interaction, and a body of rules), then the Stratification Axiom is theoretically and empirically sound. Although no evidence yet exists for Galtung's (1966a, p. 149) belief that inter-nation "relations tend to be more rank-dependent than inter-group relations within a nation . . .," empirical analyses are available to support the axiom. For example, Schwartzman (1966) empirically delineated a Latin American stratification system and Gleditsch (1967) found the inter-nation and intra-nation "stratification pyramids" to have similar relative numbers within each rank.

¹⁹Modern sociology defines "class" or "social class" by equal rankings (Ossowski, 1967, p. 91; Kohn and Schooler, 1969, p. 660; Lenski, 1966, pp. 74-75; Lipset and Bendix, 1962, p. 275).

More restrictedly, Marx defined class as performing the "same function in the organization of production." (Bendix and Lipset, 1966b, p. 7) Hence, men can have similar wealth (a status variable) and still have different relationships to production and be in different classes. For Weber also, class is based on economic interests and a status group are those "men whose fate is not determined by the chance of using goods or services for themselves on the market, e.g., slaves . . ." (1966, p. 22).

For modern sociology to generalize "class" to be "equal rank groups" loses Marx and Weber's important meaning (e.g., that equal rank groups can have different economic interests), without providing a substitute concept.

The stratification concept has not been applied to international relations by sociologists alone. Rosenau (1969), for example, defined status as one of four inter-nation "issue areas" (the others are territorial, human resources, and non-human resources).²⁰

Moving on, from the Stratification Axiom, the two previous axioms, and Theorem 1 comes the following theorem:

Theorem 2 (Status Theorem): Status dimensions are a subset of attribute space dimensions.

A dimension has characteristics especially suited to defining status. A status-field theory dimension defines mutual attribute interrelationships, an attribute pattern or cluster. And status comprises such a cluster. Status is not one variable, like GNP per capita, education, income, or residence alone. It is a generalized evaluation associated with a pattern of attributes (Zelditch and Anderson, 1966). It is a halo effect (Berger, Cohen, and Zelditch, 1966) adhering to many attributes. Indeed, in Zetterberg's (1966, p. 130) words, "ranks become convenient bundles of evaluations of their occupant."²¹ For example, wealth is a status pattern involving many beliefs and characteristics, such as a person's politics, residence, income, education, and manner.²²

²⁰See also Tanter (forthcoming) and Wallace (1970).

²¹By "rank," Zetterberg means the "evaluation of a position." (p. 130) In substance, his use of rank is analogous to my use of status and should not be confused with rank as defined below.

²²At this point, a status pattern is not to be confused with rank as defined below. A status pattern involves a cluster of attributes such as wealth. But there may also be distinct patterns, such as power (another cluster of attributes) and prestige. Rank is not a status pattern, but the total of an individual's statuses across all status patterns. Thus, if there are three status patterns like wealth, power, and prestige, then a person's rank is his overall standing on all three statuses.

Mathematically, the status-field theory dimensions comprise such patterns of attributes. A status dimension implies a cluster of attributes associated with that status.²³ The existence of two dimensions implies that two distinct "bundles" of attributes define status evaluations, like wealth and power.

Definition 1 (Status Definition): A status dimension (of attribute space) is a continuum involving virtually universal international consensus as to which end is better or more desirable. An ascribed status dimension is one on which nations cannot alter significantly their relative status in a generation. An achieved status dimension is one on which nations can so alter their location.²⁴ A nation's rank is its total status on the status dimensions.

Does status really exist among nations as defined? In status-field theory, status is a construct which enables observable behavior to be deduced, and as such, has no reality outside the theory. As Willer and Webster (1970, p. 751) express this point, such concepts as sex difference, or occupations like clerk or proprietor are "real" in that they exist "independently of a theory" in which they might be used. The "question of whether status characteristics or expectation states 'really' exist in this sense is meaningless. All that use of these concepts implies is that they are

²³For a statistical definition of status as such a pattern, see Cattell (1942) who factor analyzed a variety of status related variables to define the "axis along which social status is to be measured...."(p. 297)

²⁴"The problem of how to define ascribed versus achieved in the international system is not insurmountable. As a working definition this seems sufficient: 'A nation's status is ascribed if it is independent of the present generation's efforts, achieved if it depends on the present generation's efforts.'"(Galtung, 1966c, p. 189)

convenient things to talk about and to use for explaining phenomena. The theory must specify logical and operational methods of deriving 'real' consequences which can be observed, but the use of the constructs themselves is based upon considerations of utility and simplicity." Willer and Webster (p. 753) further argue that, advantageously, the theory incorporating such constructs transcends individual instances. I would add that such theories then can be truly universal, and thus falsifiable by single instances (Popper, 1965).

Status is esteemed, wanted. The status literature shows consensus on this, although authors place different emphases. For example, status is: superiority, equality, or inferiority relationship (Wright, 1942, p. 1443; Svalastoga, 1965, p. 2); a "favorable evaluations" reward pattern (Zetterberg, 1966); an "evaluation" that one person is better or worse than another (Berger, Cohen, and Zelditch, 1966); "a matter of perception, and of perception that puts stimuli in rank order" (Homans, 1961, p. 149); and "the value (or position) of a unit on a rank variable ...," where a rank variable is "any variable upon which social units rank each other" (Gleditsch, 1970a, p. 2).

As status is defined, Veblen's leisure class theory is fundamentally a status interpretation of behavior. His famous "invidious comparison" concept is used in "a technical sense as describing a comparison of persons with a view to rating and grading them in respect of relative worth or value...." (Veblen, 1966, p. 38) To have status is to put it in evidence. Thus arises Veblen's concept of conspicuous consumption.

But consumption may also be employed as a symbol of a nonexistent status. As Rex (1961, pp. 145-6) states: "it is not the possession of

the crucial qualities themselves which are important, but the symbols of their possession. Thus what seems to matter in most status systems is not so much the possession of a quality ... as the living of a certain 'style of life.'" International examples are the small, poor nations that buy airlines or maintain standing armies and miniature air forces, although they can ill afford and little need them.

What attribute dimensions are status dimensions? Since status is esteemed, many empirical attribute dimensions found (Russett, 1967, 1968; Rummel, 1969c) are clearly ruled out. For example, little consensus exists about the desirability of Catholic or Oriental cultures. Moreover, the Political Orientation dimension, which arrays Western type democratic systems and Communist (or totalitarian systems) at opposite ends, is *prima facie* not a status dimension in reflecting sharp disagreement as to the desirable political system. Status represents a consensus about what attributes are desirable.

Before postulating the status dimensions, what has been implicit so far should be stated clearly.

Corollary 1 (Status Measurement Corollary): Status is a continuous variable.

Since status is defined as an attribute dimension and as a continuum (by the Status Definition), nations are distributed continuously along the status dimensions. Thus, discrete variables or rank order variables are not treated as statuses. The only discrete attribute possibly qualifying as a status variable is whether a country is a colony. However, this attribute is irrelevant here since sovereign nations (nation-states) are the social

units of concern. This is because colonies and nation-states possess fundamentally different attribute and behavioral possibilities. For example, attributes describing the defense and political systems of nations are not applicable to colonies. Moreover, colonies cannot maintain diplomatic personnel abroad, join international organizations (with few exceptions), engage in a range of conflict behaviors, etc. Therefore, unless the theory incorporates this fundamental distinction between colonies and nation-states, both should not be included if we wish to explain and predict nation-state behavior.

Applying status theory has usually involved rank ordering nations on status variables, such as population or GNP per capita. This hardly is justifiable, and loses information in otherwise continuous variables. It is not only the status rankings that are perceived, but also relative differences in that esteemed. Although the U.S. may be first and the U.S.S.R. second in GNP per capita, other nations also perceive the actual difference in GNP per capita.

The Status Measurement Corollary is also pertinent to statuses within nations. According to Svalastoga (1965, p. 60), perhaps "the strongest evidence in favor of the assertion that modern industrial society is distributing status more or less continuously along its major dimensions is found in the plight of research workers who desire to distribute social members into a few strata. In absolutely no case have researchers in these societies been able to show that their particular boundary lines denote discontinuities in the social hierarchy" ²⁵

²⁵However, the case for the "continuum theory" has not been adequately supported yet (Ellis, 1958, pp. 272-3). See also Gleditsch (1970a, pp. 19-20).

The second status-field theory definition can be stated now.

Definition 2 (Status Dimensions Definition): The international status dimensions are economic development and power.

Cross-national studies by different investigators using different nation samples, and different variables for different time periods have consistently delineated these dimensions (Russett, 1967, 1968; Rummel, 1969c; Van Atta and Rummel, 1970). Moreover, international relations students and practitioners have considered power to be a dimension of nations and more recently, political scientists, sociologists, economists, and anthropologists have assumed that economic development is a basic dimension differentiating nations. Therefore, we may conclude with some confidence that power and economic development describe actual nation variation.

But why posit economic development and power as status dimensions? These are the only consistently delineated national dimensions invoking international consensus about what is desirable. Other national dimensions, such as the aforementioned ones comprising political orientation, religion, and culture, invoke no consensus about what is esteemed or desirable.

These reasons notwithstanding, do economic development and power empirically conform to status as conventionally defined? The status literature gives wealth (or privilege) and power the major societal role as status variables. Those values "most highly prized in the society tend to be taken as the central bases of the system of stratification." (Berelson and Steiner, 1964, p. 455) And states Williams (1947, p. 55), the "main classes of scarce divisible values are: wealth, power, and prestige within a given group or culture." Wealth, power, and prestige are then the primary or basic

(Benoit-Smullyan, 1944, p. 155) status types.²⁶ Power status defines an individual's or nation's political status and is another link to the traditional international relations power concept and theories. The "aspect of the power relation that often is of greatest moment to the total relevance of harm and revenge, is that bearing upon status implications." (Heider, 1958, p. 268)

For nations, also, the major values are wealth, power, and prestige, "and they constitute the status of a nation." (Lagos, 1963, p. 9) National wealth comprises such attributes as high GNP and energy production per capita, many vehicles and telephones per capita, high literacy rate, etc. Clearly, economic development measures wealth and defining economic development as a status dimension is reasonable.

Patel (1964) has similarly defined development as a status dimension. For Patel (1964, p. 119), an "inequality has now slowly impressed itself upon the conscience of advanced thinkers -- the vast gap in levels of living that divides rich and poor countries of the world. Shrinking distances

²⁶"If this were the place to go into details, I could readily explain how, even without the intervention of government, inequality of credit and authority became unavoidable among private persons, as soon as their union in a single society made them compare themselves one with another, and take into account the differences which they found out from the continual intercourse every man had to have with his neighbours. These differences are of several kinds; but riches, nobility or rank, power and personal merit being the principal distinctions by which men form an estimate of each other in society, I could prove that the harmony or conflict of these different forces is the surest indication of the good or bad constitution of a State." (Rousseau, 1950, pp. 264-5)

And, according to Socrates in Plato's The Republic (423), "you ought to speak of other States in the plural number; not one of them is a city, but many cities, as they say in the game. For indeed any city, however small, is in fact divided into two, one the city of the poor, the other of the rich; these are at war with one another; and in either there are many smaller divisions, and you would be altogether beside the mark if you treated them all as a single State."

and increasing knowledge about other peoples have contributed to its rapid recognition. It has been characterised as 'the most important and fateful fact in the world today.' Now, on the second centenary of Adam Smith's advocacy of laissez-faire, nearly every country is planning to chart consciously the course of its development."

With what attribute pattern or cluster can the power status of a nation be identified? First, power status is associated with what the international relations literature customarily calls power capability. Those "elements," "factors," "ingredients," or "characteristics" (Sprout and Sprout, 1962; Morgenthau, 1954; Organski, 1960; Wright, 1942; Knorr, 1970) defining this capability are a nation's national income, population, size, area, resources, energy production, defense expenditures, and men under arms. Second, these attributes comprise a pattern -- a dimension -- linearly independent of economic development (Russett, 1968; Rummel, 1969b). This dimension is called alternatively Size or Power Bases. In either case, it is identified as the power status dimension.

Defining economic development and power as status dimensions conforms with status findings and research on international relations, such as Schwartzman's (1966) and Reinton's (1969). Schwartzman intercorrelated status variables for Latin American nations and found "the existence of two well-characterized clusters, one corresponding to a development dimension, the other to a size dimension, both with strong internal intercorrelations and low external correlations." (pp. 58-60) He also developed a "subjective" ranking of Latin American countries, based on sixty-five respondents, and the subjective and objective rankings have a rank correlation of .93. For Reinton (1969, p. 50), economic development and size (power bases) delimit

the "rankings that describe relevant role sets," where status is "a denomination of role sets" Later, this interesting relationship between status and role will be developed.

A final point: Status-field theory does not define the attribute or behavior space dimensions as mutually orthogonal (statistically independent). They are only linearly independent, a less restrictive condition satisfied when the dimensions are not perfectly correlated. Theoretically, therefore, the two status dimensions are permitted to have a significant correlation, which accords more with status theory than restricting them to zero correlations (orthogonality).

What about the third status variable, prestige, which the Status Dimensions Definition does not include? It is omitted because the status dimensions are assumed to be linearly independent. Prestige cannot be a dimension, since it is dependent on economic development and power.

Prestige status is not indexed by physical attributes as are wealth and power, but by sentiment and feeling. It is the esteem of others, and as such is a function of wealth and power. Lenski (1966, p. 431), for example, notes that "with respect to occupational prestige, the chief determinants are variables which are normally subsumed under the categories of power and privilege."*(italics omitted)*²⁷ As another example, Hodge and colleagues' (1966) cross-national study found prestige hierarchies very similar, and concluded that cross-societal structural uniformities account for prestige. They speculate that these uniformities involve the pattern of economic development.

²⁷Not all sociologists claim such a strong relationship. For some contrary examples, see Benoit-Smullyan (1944, p. 159).

Internationally, evidence supports assuming that prestige is dependent²⁸ on economic development and power. For example, Schwartzman (1966) asked respondents to rank Latin American countries by their "prestige or importance." The prestige ranking was highly correlated (.93) with economic development and size (power bases) rank. Similar results were obtained by Alcock and Newcombe (1970) for Latin America and by Shimbori (1963) for the world's major nations.

Lagos (1963) believes two factors determine national prestige status: "(1) by the synthesis of the status of a nation on the levels of power and economy; and (2) by the grade of accord between the international conduct of the nation and the value orientations of the international system." (p. 20) However, Lagos' second factor does not define status. Nations have no general consensus on the proper international values; the Cold War has been precisely over what value orientations will be dominant. Even the sovereignty norm (which is Lagos' particular concern) evokes no consensus, behaviorally. In sovereignty's name, nations often economically, politically, and militarily intervene in others' affairs, provoking protests about violations of sovereignty. This suggests omitting Lagos' second factor, leaving prestige wholly defined by economic development and power.

Considering these arguments, prestige can be a status attribute, but not a dimension. Prestige status is thus like rank, which is defined (Status Definition) as also linearly dependent on power and economic development dimensions. Prestige and rank cannot also be dimensions, therefore, since

²⁸"Dependent" is not meant causally, but as a mathematical relationship. If X is dependent on Y, causally or not, then mathematically one is redundant against the other. Statistically, the variance in one is subsumed by the variance in the other.

attribute space dimensions must be mutually linearly independent. Since, however, nation attributes can be linearly dependent on the two status dimensions, defining prestige and rank as attributes entails no contradiction.

Another aspect of the Status Definition should be discussed. Achieved and ascribed status dimensions are distinguished by their nature: economic development is the achieved status dimension; power, the ascribed.

Economic development comprises per capita attributes like GNP, energy consumption, telephone, and vehicles per capita (Sawyer, 1967; Rummel, 1969c). By a generation's effort, a nation can change significantly these attributes, relatively, as have Japan, Taiwan, and West Germany. On the power dimension, however, which includes men under arms, area, national income, resources, and energy production, a nation cannot alter so easily its status. Resources are fixed and unchangeable. Moreover, the population base limits the number that can be placed under arms. The underdog power status of a nation of two million population is fundamentally frozen compared to those having 50, 150, and 250 millions. And national income, Organski's power index (Organski, 1960), is tied to the population base. Economically underdeveloped nations like India and China have, nonetheless, higher national incomes than economically developed ones like Canada, New Zealand, Australia, Switzerland, Japan and Norway. Although economic development sharply increases national income, this cannot overcome the power anchor that is a small population. Power capability, even in the nuclear age, is locked into a nation's size.²⁹

²⁹Applying status theory to international relations, Midlarsky (1968) operationally defined achieved status as "the rates of change of economic development, population, transportation, urbanization, and communication." (p. 13) All these measures and their changes are highly correlated with the economic development dimension defined here. Midlarsky considers ascribed status, however, as "the rate of change over time ... of the number and rank of diplomats received by that nation." (p. 13)

So far status theory has been linked with field theory's first two axioms and Theorem 1. To incorporate status theory further, another theorem is needed.

Theorem 3 (Position Theorem): Nations are located as vectors in attribute space and as vectors of nation dyads in behavior space.

This theorem, which Axiom 2 implies, means that social units have social space-time position and movement in each space. For attribute space the social unit is the nation; for behavior space, the nation pair, coupled by one's behavior to the other. This actor-object dyad has a unique behavioral space-time (vector) position, defining the actor to object behavior for a specific time (like China's 1970 exports to Burma) relative to all other nation dyads.

Using Theorem 3, status position propositions and definitions now can be incorporated.

Corollary 2 (Status Position Corollary): An attribute space position defines a nation's relative status.

The term "relative" is necessary (and adds power to status-field theory). The social space-time origin is the mean of all attributes over time; all attributes are theoretically standard units (each attribute mean equals zero and standard deviations equal unity). A nation's attributes are therefore relative to other nations'; and the total, dynamic, complex interrelationships between these attributes (thus, the field notion) isolate a nation's space-time location. Therefore, a nation's time defined status position is relative to other nations' statuses, their non-status attributes, and all the dynamic interrelationships between statuses and non-status attributes filling the social space-time. "Failure to recognize this

relativity of such terms as status and societal distance [also a key concept in social-field theory] (a) to the standards of some individual or group and (b) to the aspect of a situation under consideration has resulted in apparent incongruities and inconsistencies in the usage of these terms." (Lundberg, 1939, p. 314)

This relativity notwithstanding, treating the attribute space's origin as the attribute mean provides the anchorage point required for status to be a positive evaluation. According to Zetterberg (1966, p. 137), understanding "an evaluation" entails a unit (which in status-field theory is the standard score), an anchorage point (the mean), and an evaluative score (the actual scores on economic development and power dimensions). These scores shift in time only as a nation improves or loses its status relative to other nations. This is reasonable, as status is a relative evaluation and not some absolute objective characteristic. For example, with their limited but modern weapons, contemporary low power status nations would have had the highest power status a century ago.

The Status Position Corollary simply explicates what the Position Theorem contains. Now the Mobility Theorem can be stated.

Theorem 4 (Mobility Theorem): Nations desire upward status mobility.

This theorem is implied by the status definition.³⁰ Not implied

³⁰For individuals, Galtung (1966c, p. 158) states this as the Axiom of Upward Mobility: "All individuals seek maximum total rank and the only stationary status set is the status set with only high statuses." See also Galtung (1966b, p. 142) and Gleditsch (1970a, p. 4).

Apter (1958) presents a relevant political model possibly applicable to international relations. Within the model, the "dominant motive" of individuals is improving their rank. They therefore "join in political groups to expand mobility opportunities and, in this respect, make representations to government or to influence or control government in some manner." (p. 221) See also Lipset and Bendix (1962, especially p. 61).

elsewhere, however is that nations also will prefer balancing their statuses to moving upward on the highest status.³¹

Theorem 5 (Equilibration Theorem): Nations having unbalanced statuses desire to balance them.

This follows from the Mobility Theorem and the status disequilibrium axioms and theorems given below. The Mobility and Equilibration Theorems jointly imply that a nation will emphasize equilibration over mobility.³²

To clarify this, we can adopt Galtung's simply way of illustrating status propositions. Call the high status nation the topdog (T); the middle status one the middle-dog (M); and the low status one the underdog (U). Throughout this paper, the first status noted will be always economic development, the second will be power. Then, for example, a nation high on economic

30(continued)

Like Apter, Sorokin (1947) has made rank improvement society's core motivation. "As any stratification means 'superiority and inferiority,' 'domination and subordination,' it generates an incessant struggle of the members of the various strata, all seeking to climb up the ladder to a higher place in the hierarchy." (p. 288) Not all empirical work confirms this "incessant drive." See for example, Lane (1962).

³¹Benoit-Smullyan (1944) argues that individuals' statuses tend to a common level -- to equilibrate. Fenchel and colleagues (1951) tested this equilibration hypothesis on 72 male sophomores and the "findings were in accord with the hypothesis." (p. 479)

³²Galtung (1966c, p. 158) presents an Axiom of Rank Equilibration: "All individuals try to equilibrate their status sets upwards, and only status sets with equal ranks are stationary." In a technical sense, this axiom contradicts his aforementioned Axiom of Upward Mobility (see footnote 30). Galtung argues from his Mobility and Equilibration axioms that individuals unbalanced on their statuses will first tend to equilibrate them before improving the previously higher status. However, his Equilibration Axiom asserts that once equilibration is achieved the status sets are stationary. This contradicts his Mobility Axiom, which states that only the top statuses are stationary.

For a discussion of status equilibration for individuals, see Benoit-Smullyan (1944, especially p. 160).

For a "balance axiom" which he later applies to nations, see Gleditsch (1970a, p. 4).

development and low on power can be described as a TU, a nation low on both as a UU.

Adopting this simple notation does not imply that status is trichotomous or to be measured trichotomously. Status is a continuous variable (Status Measurement Corollary). However, the development can be usefully simplified and pencil and paper tests of its internal logic conducted by considering just high, medium, and low statuses (or only high and low). For, a deduction true for a continuous variable (in the status-field theory linear world) also holds for trichotomous and dichotomous cases. The simplification spotlights logical error, contra-intuitive constraints and predictions without a full scale empirical test. Thus, Galtung employs this notation throughout his work and Nils Petter Gleditsch has argued his points using this technique in our frequent interaction on field and status theories.

Now, a TT nation is balanced, as are MM and UU ones. UT, TU, MT, etc., nations are unbalanced. The Equilibration Theorem says that a MU status nation, for example, will try to raise the U status to an M. The Mobility Theorem rules out equilibration by decreasing M to a U.³³ Jointly, the Equilibration and Mobility Theorems assert that an unbalanced nation, such as an MU, will prefer elevating U to M before increasing M.

How can the Mobility Theorem be explained? So far the nation is treated as an entity, a unit, a billiard ball. Jarvad (1968) argues that it "seems justifiable to treat nations as single actors, and to assume that they have rank, and, like individuals, try to maximize their rank in

³³Apprehension over losing relative status "has been a major cause of popular anxiety under a balance-of-power system"(Wright, 1942, p. 1114).

this respect." (p. 313) Treating nations as "black boxes" in this respect, regularities could be postulated between status characteristics and behavior. This is certainly an acceptable international relations approach when asserting or assessing relationships between behavior and physical characteristics. But using "evaluations," "expectations," "desires," and "frustrations," to describe status and explain behavior for nations as wholes stultifies status-field theory's possibilities and promotes misunderstanding the theory's application. Each nation is itself a complex social system filtering outside events, transforming them into foreign policy decisions and actions. When the Mobility Theorem asserts that "a nation desires," therefore, what is meant qua the national social system? How does a nation's status penetrate the nation and influence its international behavior?

The international relations status literature has not treated these questions, except for Peter Heintz's (1969) work. Heintz posits that a nation's elite perceives the nation's statuses and if they are unbalanced a tension will be generated. In Heintz's theory, this tension is fundamental and an agent of economic development. Reacting to this tension, the elite may try to right the status imbalance through an economic development policy.³⁴ This promising theoretical line cannot be developed here, but

³⁴One of Heintz's hypotheses is that when an individual's statuses coincide with his nation's analogous statuses, he identifies his problems with those of his nation. Schwartzman and Araujo (1966) empirically substantiated this hypothesis.

A "relationship of subordination and dependence of the under-developed areas has been created with respect to those that are developed, a structure of superordination and subordination that is typical of a system of social stratification. In this structure it is the nation, not the social class, that emerges as an adequate channel to promote the improvement of the living standards These factors contribute to the idea that the basic problem of inequality is imbedded primarily in terms of nations rather than in terms of classes." (Lagos, 1963, p. 6)

Heintz's viewpoint is implicit so far and will be made explicit through the following corollary.

Corollary 3 (Elite Corollary): A nation's elite identify with their rank and status configuration.

Thus, an official having uniformly high statuses within a nation that is a TU internationally will act as a TU in making foreign policy decisions and interacting with officials of other nations. This Elite Corollary enables us to apply individual level sociological propositions at the nation level to understand how national statuses influence international behavior; it enables tying together status theory and foreign policy decision making research.³⁵

Now, this paper's central definitions will be presented. These will allow later enveloping within status-field theory the behavioral consequences of rank and status disequilibrium.

Definition 3 (Rank Definition): The rank of i is $\alpha_1 s_{i1} + \alpha_2 s_{i2}$, where α_1 and α_2 are positive parameters and s_{i1} and s_{i2} are nation i 's economic development and power statuses, respectively.

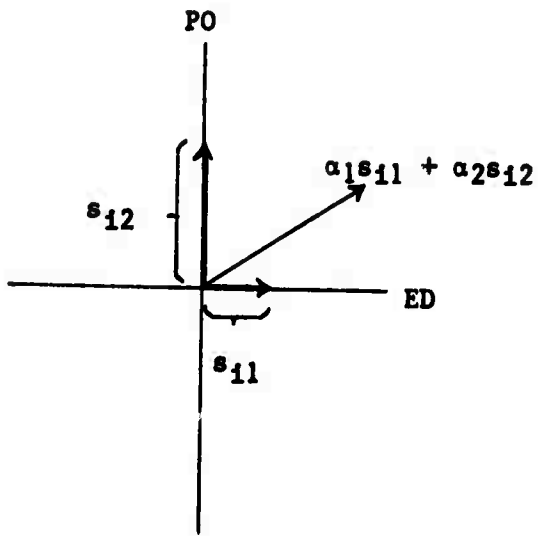
³⁵"The important process from the point of view of relations between States seems to be that which takes place between the point of input and the point of output -- the process of accumulating facts and information, classifying, sifting, the process of goal determination and the use of information in relation to it, the selection of alternatives in the pursuit of goals, and so on. If we have a model which can cope with these inner processes, then we are less limited in consideration of input and output, and can take into account factors other than power, including limitations of power and restraints on the exercise of power." (Burton, 1967, p. 145)

This definition departs from (Galtung, 1966a, 1966b; Gleditsch, 1970a, pp. 2-3; Jarvad, 1968; Schwartzman, 1966)³⁶ rank or total status which is conventionally $s_{11} + s_{12}$ where each status dimension is usually accorded equal weight and $\alpha_1 = \alpha_2 = 1.0$.

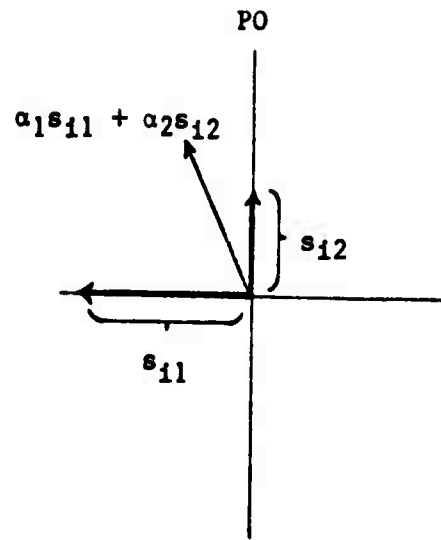
When confronting such an inconsistency, clarifying the definition's purpose helps. Status theory traditionally employs the "rank" concept to explain behavior. However, status theory (as sociologically elaborated or applied to international relations) furnishes no theoretical rationale or empirical basis for thus equally weighting statuses. Lacking such direction, therefore, a more sensible approach is differentially weighting positively an individual or nation's statuses depending on the behavior. Geometrically, the statuses then bound a vector space containing all rank dependent behaviors and not all such behaviors have similar space-time locations. Thus, the Rank Definition treats rank as a two dimensional plane produced by the economic development and power dimensions. This plane will contain behaviors later posited as rank dependent.

Specifically, the positive parameters weighting the two statuses imply that a nation's rank lies in the quadrant bounded by the nation's economic development and power statuses. Figure II may clarify this. Figure 2a shows i as above average in economic development (EC) and power (PO) statuses, and because α_1 and α_2 are positive parameters, the rank vectors ($\alpha_1 s_{11} + \alpha_2 s_{12}$) are restricted to the first quadrant. The other figures show to what quadrant total status is limited as i is above or below the two status averages (the origin).

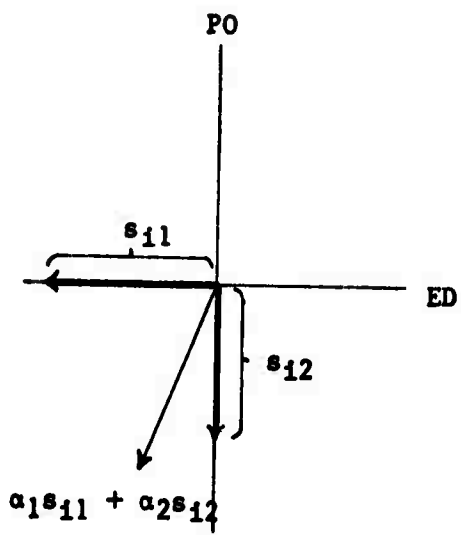
³⁶Schwartzman and Araujo (1966) summed the rank of Latin American nations across several status indicators, whose rank then correlated (.93) with a subjective status rank index (developed from interviews with college sophomores).



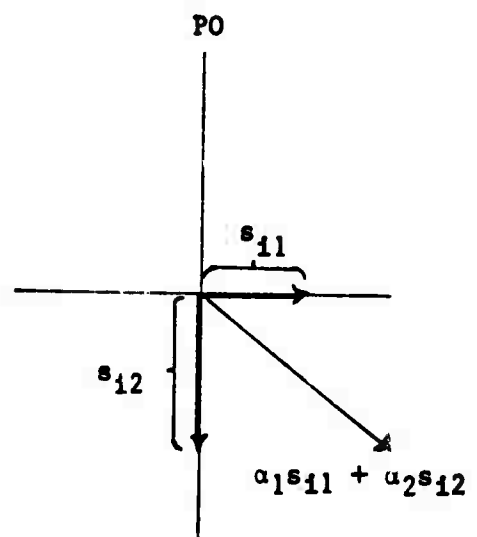
2a



2b



2c



2d

Figure II

The parameters are necessarily restricted to positive values. Were negative parameters also possible, then the parameters would have the following sign combinations: ++ (case 1), +- (case 2), -+ (case 3), and -- (case 4). Case 1 is the Rank Definition. Case 4 also could define rank parameters, but then "rank" would mean joint low status. Both cases 1 and 4 cannot be allowed simultaneously, but status theory permits defining rank using either case.

If cases 2 and 3 were admitted, the Definition would depart from the conventional meaning. Statuses could cancel out, then, and "rank" would not reflect a nation's overall high or low status. For instance, if cases 2 and 3 were possible, TT, MM, and UU nations could have similar rank values.³⁷

On another point, the Rank Definition delimits a single nation's rank. The sociological literature has been confused on this, and the confusion has been carried over to status theory applications in international relations. Often, status theory is limited to an individual's or a nation's rank (or status disequilibrium, as discussed below), to which behavioral consequences are linked. However, in status theory discussions, this behavior often appears to be dyadic and dependent upon the two individuals' or nations' joint status.³⁸ Even Homans (1961), one of the few who have considered status in an explicitly dyadic context, does not clearly differentiate monadic and dyadic rank dependent behavior. Since status-field theory will relate dyadic behavior and status dimensions, monadic and dyadic rank dependent behavior will be differentiated.

³⁷To show this, let $T = 2$, $M = 1$, and $U = 0$ values. Let $\alpha_1 = 1$ and $\alpha_2 = -1$, which is case 3. Then for case 3, the rank of $TT = +1(2) - 1(2) = 0$; the rank of $MM = +1(1) - 1(1) = 0$; and the rank of $UU = +1(0) - 1(0) = 0$.

³⁸See Mitchell's (1964) similar criticism of Lenski's and Jackson's status crystallization work.

Definition 4 (Joint Rank Definition): The joint rank of two nations, i and j , is $\alpha_1 (s_{i1} + s_{j1}) + \alpha_2 (s_{i2} + s_{j2})$, where α_1 and α_2 are the positive parameters in Definition 3.

This definition simply extends to the dyad the definition of a nation's rank: joint rank equals $\alpha_1 s_{i1} + \alpha_1 s_{j1} + \alpha_2 s_{i2} + \alpha_2 s_{j2} = \alpha_1 (s_{i1} + s_{j1}) + \alpha_2 (s_{i2} + s_{j2})$.

Status theory uses rank as a key concept explaining behavior. Another such concept is status disequilibrium, for which synonyms are status incongruence (Malewski, 1966), disaffine status (Sorokin, 1947), status inconsistency (Kimberly, 1966), and status imbalance (Zelditch and Anderson, 1966). The antonym of status disequilibrium is status equilibrium or crystallization (Lanski, 1954), which means that an individual's or a nation's statuses are equal.

As with rank, status disequilibrium will be defined first for the nation, then the dyad.

Definition 5 (Status Disequilibrium Definition): A nation's status disequilibrium is $\pm \alpha_1 s_{i1} \mp \alpha_2 s_{i2}$, where α_1 and α_2 have different signs.

This definition extends the Rank Definition to signs \rightarrow or $+$ for the parameters, which are cases 2 and 3 discussed above. Consequently, the rank and status disequilibrium definitions entail a nation's total possible variation on the status plane delimited by the economic development and power dimensions. Any status dependent behavior is dependent on either a nation's rank or status disequilibrium. No other (linear) possibilities exist.

This notwithstanding, does the Status Disequilibrium Definition accord with practice? Usually, status disequilibrium is defined as the absolute,

and not the arithmetic status differences. Lenski (1954), for example, measures status crystallization as the positive square root of the squared differences of an individual's statuses from the mean, which produces an absolute difference. Jackson (1962), another sociologist closely identified with the status crystallization concept, measured it by categorizing individuals as to their status crystallization, which also equals ranking on absolute differences.³⁹

Defining status disequilibrium by absolute differences does not differentiate, for example, TU and UT statuses. Distinguishing those statuses is important, however. Considering the first status as achieved and the second as ascribed, then TU and UT statuses will not equally affect behavior. The frustrations and psychological stress of the black doctor with high achievement and low ascribed status (race)⁴⁰ will be different in nature and intensity than the white laborer's.

Moreover, regarding dyadic behavior, the absolute difference would predict the same behavior of a UT to a TU and UT. This is contra-intuitive, and also contra-status theory itself. For the theory is that those having the same disequilibrium, as do nations with UT statuses, will behave differently toward each other (like two black doctors) than do those having distinctly different disequilibria, such as a UT and TU (like a black doctor and white laborer).

³⁹Other examples are Gleditsch (1970, 1970b) and Galtung (1966b, especially p. 126; 1968b, p. 286). Not all conform to this practice of measuring status disequilibrium by absolute differences. Midlarsky (1968), for instance, measured status inconsistency by the arithmetic differences between his ascribed and achieved status variables.

⁴⁰This example is now less relevant for American society, than twenty years ago, since there is less consensus on the value of white over black than there used to be. The feelings behind the slogan "black is beautiful" has helped to make race less a status characteristic for a number of blacks and whites.

In sum, the absolute difference measure does not conform with status theory, nor with its empirical propositions. Another reason for rejecting this measure is that it does not cover all the variation on the status plane remaining after rank is accounted for: there are linear status combinations which have no behavioral consequences. Either this variation must be covered by another status concept or postulated as behaviorally irrelevant. Thus, the Status Disequilibrium Definition appears to be sound on theoretical and logical grounds.⁴¹ What about intuitively? Does this definition order nations on their behavior as status theory would predict? The answer, as will be shown after additional definitions and axioms, is yes.

The Disequilibrium Definition can be now extended dyadically.

Definition 6 (Status Incongruence Definition): The status incongruence of two nations i and j is $\pm \alpha_1 (s_{i1} - s_{j1}) \mp \alpha_2 (s_{i2} - s_{j2})$, where α_1 and α_2 have different signs.

This simply extends the Disequilibrium Definition to two nations. The term "incongruence" is used because disequilibrium is a monadic concept, seldom applied to status imbalance between nations. Even where dyadic behavior is concerned, disequilibrium usually defines the actor's status imbalance and its effect on the actor's behavior to the other nation. Moreover, "incongruence" reflects status-field theory's concern about two nations' differ-

⁴¹To show, for example, that the definition discriminates between a TU and UT disequilibrium, consider the case of $+\alpha_1$ and $-\alpha_2$. Now, let $T = 1$ and $U = 0$. Then, the TU status disequilibrium $= +1(1) - 1(0) = 1$. That of a UT $= +1(0) - 1(1) = -1$.

ence in status profile and status magnitudes. The more alike in profile and magnitude, the more congruent their statuses.⁴²

Definitions 3 - 6 concern the status aspects of attribute space. They and the previous axioms and theorems explicate the logic and substantive interpretations subsuming status theory, leaving field theory unaltered mathematically. Along this line, the following corollary will couple the incongruence concept from status theory and field theory's basic distance concept.

Corollar 4 (Status Distance Corollary): Status incongruence between nations i and j is the distance vector between their status vectors on a status dimension.

Now, the statuses of i and j on economic development, s_{i1} and s_{j1} , are vectors (for example, Figure II above). Let $d_{i-j,1}$ denote the economic development distance vector between i and j . Then $d_{i-j,1} = s_{i1} - s_{j1}$ defines status incongruence on this dimension. Therefore, generally, dyadic status incongruence = $\pm \alpha_1 d_{i-j,1}$ and $\mp \alpha_2 d_{i-j,2}$.

⁴²The Status Incongruence Definition extends to the continuous case Galtung's rank congruence and incongruence definitions for two units and two status dimensions (Galtung, 1966b, p. 132). Galtung also treats rank congruence as a difference, which can be positive or negative. Regarding Galtung's status theory development, then, he leaves unanswered the question as to why he defines the difference between statuses for one unit on two dimensions as absolute and for dyads as signed.

According to Homans who also applied the status congruence concept (1961, p. 248), "status congruence is realized when all of the stimuli a man presents rank better or higher than the corresponding stimuli presented by another man -- or when, of course, all of the stimuli presented by the two men rank as equal. The less fully this condition is realized, the greater the status incongruence." Homans does not clarify this mathematically, and actually seems to be defining rank equality and inequality rather than "congruence" in Galtung's usage and the definition adopted here.

This corollary mathematically unites the two fundamental concepts of status and field theories: status and attribute distance. Substantively, however, should these two concepts be connected? Has what sociologists kept apart been artificially brought together? Recalling that the attribute distance vector measures social distance and its linkage to status produces status distance, then the answer is no. In fact, status distance brings together a number of other concepts in sociology:

In addition to positions and roles that are differentiated according to prestige and popularity, we might have mentioned differentiations of power and authority (within families or organizations, for example); knowledge, skill, or other kinds of expertness (especially within occupational groups); social class; and caste (often, though not necessarily, associated with racial differences). Each of these kinds of differentiation is unique in some ways, but an important thing they have in common is that behavioral relationships vary with status distances. The greater the status distance between persons, the greater the behavioral distance between them on such dimensions as deference or the kinds of intimate behavior that are associated with high mutual attraction. If the giving and receiving of deferential behavior may be assumed to represent distance, and intimate behavior closeness, then behavioral distance tends to parallel status distance. (Newcomb, et al., 1965, pp. 340-341)

Other examples tying together status and social distance can be given. Lundberg, in his classic (and controversial) sociological foundations work (1939, pp. 312-313), says that the "phenomenon of status is . . . an aspect of every societal situation. Since it is always relative, and since relative status is expressed in spatial terms in most, if not all, modern languages, the term social distance has been adopted to denote degrees of separation in status" And considering more contemporary literature, "The central

concept to be used here is that of distance as a mechanism of stratification" (Van Den Berghe, 1960, p. 156).⁴³

Holding the status-attribute distance relationship in mind, the final field theory axiom's relevance to status theory will become clear.

Axiom 4 (Attribute Distance Axiom): Between nation attribute distances at a particular time are social forces determining dyadic behavior at that time.

By the axiom, the fundamental behavior-attribute linkage is

$$w_{i \rightarrow j, k, t} = \sum_{l=1}^p \alpha_{li} d_{i-j, l, t}, \quad (1)$$

where w_k is the k th behavior space dimension, $i \rightarrow j$ is a particular dyad with nation i acting toward nation j , l is a dimension of p -dimensional attribute space, and t is a particular time. This makes a dyad's location -- one nation's behavior towards another at time t -- a resolution of the weighted force vectors d at that time. That is, international behavior results from relative nation attribute differences.

Loosely paraphrasing Newcomb and colleagues (1965), to reduce behavior such as that between the Soviet Union and U.S. to their distances seems to take the heart out of it:

One gets a better 'feel' for roles by descriptions that are rich in concrete detail. Thus a description of a trail of summer moonlight across a pine-sheltered lake in terms of candlepower, inches, and stability of illumination seems totally inadequate. Our problem, however, is a scientific one and it is no more required that our descriptions of role relationships resemble everyday appearances than that the physicist's description of sticks and stones *look* like sticks and stones,

⁴³See also Warner and De Fleur (1969), Laumann (1965), Westie (1959), Svalastoga (1959, especially p. 354), and Ellis (1956).

rather than looking like clouds of tiny particles. All that is required, either of the social psychologist or of the physicist, is that his descriptive devices correspond to something that can be objectively reported and that they help to account for observable events (p. 345).

Equation (1) limits the parameters, α_{li} , specifically to each actor i . This is field theory's Model II, which has been tested with positive results on three different data sets.⁴⁴ A previous field theory model (Model I) made the parameters constant for all dyads (α_l) and had poor empirical results. Status-field theory is limited here to Model II because of these previous tests and because Model I could not subsume status theory without distorting it.

RANK AND BEHAVIOR

The next axiom will help develop the status behavior-rank relationship.

Axiom 5 (Status Dependence Axiom): Some behavior dimensions are linearly dependent on status.

This axiom formalizes status theory's key notion -- that status explains behavior⁴⁵ -- and specifies a linear relationship. This linearity

⁴⁴Fourteen nation dyad samples were used to test field theory (Model II) for 1955 and 1963 data. Field theory explained fifty-seven percent of the 1955 variation in dyadic behavior (Rummel, 1969b); fifty-three percent in 1963 (Van Atta and Rummel, 1970).

For eighty-one dyads involving the U.S. as the actor in 1955, field theory explained forty-seven percent of the U.S. dyadic behavior (Rummel, 1970d).

⁴⁵"Again and again, research findings show that relative socio-economic rank is highly associated with nearly every kind of behavior." (Kriesberg, 1963, p. 334) "For individuals and groups alike, status is clearly one of the major determinants of social behavior." (Adams, 1953-54, p. 16) See also Sorokin (1947) and Homans (1961).

Some social scientists consider status to be the "key to the problem" of racial prejudice (Van Den Berghe, 1960).

is intuitively sensible and status theory provides no reason to assume otherwise. Status itself is a linear continuum running from low (undesirable) to high (most desirable) and the higher the status, the more a particular behavior. And this linearity appears to be confirmed by empirical results.

The axiom and above discussion do not rule out the principle of diminishing salience. The poor person may not perceive himself to be twice as status distant from the person having two million dollars as from the one with a million. Or, an underdeveloped nation's elite may see little difference between their status distances from the U.S. and the U.S.S.R. Thus, distance magnitudes may have a diminishing salience with increasing magnitudes. This principle can be incorporated into the theory by assuming the status dimension scores are log data.⁴⁶ Rather than incorporating this principle at this stage, the principle's theoretical value will be left to later empirical study.

Besides formalizing the status-behavior relationship, the Status Dependence Axiom allows defining a nation's international role.

Definition 7 (Status Role Definition): The status dependent behavior dimensions define a nation's status role.

A role is patterned behavior associated with an individual's characteristics (including his societal positions, like teacher, father and scientist) and status is precisely this.

In the major current theoretical approaches in sociology, the actor is viewed, on the one hand, as having certain acquired dispositions, such as attitudes, sentiments, conditioned responses, need-dispositions, and the like, and, on the other, as being subject to particular expectations

⁴⁶On this point with respect to the 1955 data field theory tests, see Rummel (1969b).

supported by sanctions. For convenience we may call such expectations 'role-expectations,' and we use the term 'status' to refer to an organized set of role-expectations applying to a particular actor. In these terms, the role-expectations of any one status are thought of as differentiated with respect to the statuses occupied by other actors with whom the occupant of the first is interacting. Consequently, interaction between actors is governed by the role-expectations of their respective statuses . . . and questions concerning interaction are treated primarily in terms of the relation between the actors' dispositions and role-expectations, role conflict, conformity and deviance, and sanctioning or reinforcement processes. (Wilson, 1970, p. 698)

Status does not define one role, only. In Merton's terms (1957, p. 369) "a particular social status involves, not a single associated role, but an array of associated roles. This is a basic characteristic of social structure. This fact of structure can be registered by a distinctive term, role set, by which I mean that complement of role relationships which persons have by virtue of occupying a particular social status." (italics omitted) Schwartzman (1966) means this when he talks about the emergence of generalized rank-roles for nations.⁴⁷

The next definition simply clarifies what "status behavior" means in the following discussion:

Definition 8 (Status Behavior Definition): The status dependent behavior dimensions delineate status behavior.

Before posing particular status behaviors, the range of status dependent behaviors should be noted. Status theorizing and international relations applications do not delimit status behavior well and statements

⁴⁷For a thoughtful discussion of international roles, see Holsti (1970).

in the literature sometimes imply that all behavior is status dependent.⁴⁸ In contrast, the status-field theory formalization given here sharply limits status dependent behavior. Since only two status dimensions exist, they linearly can explain no more than two behavior dimensions. This conclusion is based on the mutual linear independence of all the behavior dimensions (Finite Dimensionality Theorem) which include the two status ones.

To continue with the status axioms.

Axiom 6 (Rank Behavior Axiom): Status behavior is directed toward higher ranking nations⁴⁹ and the greater a nation's rank, the more its status behavior.

"More behavior" does not mean a greater range of behaviors, but rather a higher relative frequency. Thus, if conflict were a status behavior, the higher status nations would have more conflict.⁵⁰

⁴⁸"The claim will be made that [the conception of a rank dimension] presents us with a very comprehensive scheme for analysis of international relations, and particularly of international conflict."(Galtung, 1966b, p. 121) "All societal behavior is by definition status-fixing behavior." (Lundberg, 1939, p. 312)

⁴⁹"Those who regularly associate with a person of high prestige status, come, in some mysterious fashion, to 'participate' in that prestige, at least to the extent of raising their own Per contra, close association with those of markedly lower prestige status tends to degrade. These facts explain in large part the ceaseless struggle of those of low prestige to lessen the physical, and a fortiori the social distance separating them from those of high prestige; and the no less determined efforts of those of high prestige to avoid physical and a fortiori social propinquity with those of lower prestige."(Benoit-Smullyan, 1944, p. 157)

⁵⁰Based on a survey of small group empirical studies, Collins and Guetzkow (1964) suggest the following propositions. "High power-status persons will initiate more communication than low status persons."(p. 171) "When there is an established power status hierarchy, all group members will direct more communication to high power-status persons."(p. 172)

At the nation level, Reinton (1967, p. 343) showed empirically for Latin America that "the lower the average status of units within a pair, the lower the intensity of interaction. . . ."(*italics omitted*) Denton (1969) also found that the eleven countries with the highest rates of

Rank Behavior has been well substantiated in sociology and in international relations. The next axiom is less empirically based.

Axiom 7 (Status-Quo Axiom): High rank nations support the current international order.

Nations with TT statuses have benefited from the existing system. They are economically developed and their high power assures them of the means to maintain their high relative statuses. Since the current order supports their high statuses and permitted their attainment, maintaining these high statuses means maintaining this order. "Those people who benefit most from the stratification system are most likely to accept it." (Berelson and Steiner, 1964, p. 461) "Accept" is a rather passive verb, however, and does not carry the Status-Quo Axiom's action implication. Coser (1957, p. 203) puts this more actively: "To the vested interests, an attack against their position necessarily appears as an attack upon the social order. Those who derive privileges from a given system of allocation of status, wealth and power will perceive an attack upon these prerogatives as an attack against the system itself." This point is also implied, if somewhat more dryly, by Zetterberg's (1966, pp. 137-138) Theorem of the Preservation of the Reward System: "Persons whose evaluative score is above the anchorage point of a scale of evaluation (e.g., an institutional reward pattern) tend to resist any movement of the anchorage point closer to their evaluative score and to resist

50(continued), involvement in conflict are the countries with the greatest power." (p. 13) East (1970, p. 114) found that "the higher the strata a state belongs to, the more involved in international politics." And Gleditsch (1970a) showed that high total rank pairs of nations have higher interaction than low status pairs.

For empirical findings on the differences in behavior of high versus low status individuals, see Svalastoga (1959) and Kenkel (1965).

any inflation in the size of the unit of evaluation; those whose evaluative score falls below the anchorage point tend to resist any movement of the anchorage point away from their evaluative score and to resist any deflation in the size of the evaluative unit."⁵¹

As developed so far status-field theory implies that nations having high ranks also have much interaction (Rank Behavior Axiom) and cooperation (both support the status quo).

Interaction will often presuppose resources just as much as it will beget resources; for that reason there will be more interaction, the more resources are present. But, in addition to that, the topdog unit will prefer to interact with another topdog unit for the simple reason that he can get more rewards with another topdog than an underdog. The topdog unit will at times want to interact with an underdog unit to get the kind of services the underdog can give him, and the underdog will certainly want to interact with the topdog unit. But to the extent that we assume that any unit will try to interact with the top because that is most rewarding, two topdog units will be at an advantage because their wishes correspond to each other, whereas the wishes of two underdog units will never correspond to each other and the wishes of one topdog and one underdog unit only sometimes. And from this simple reasoning the proposition about how total rank of pairs is related to amount of interaction is a necessary consequence. (Galtung, 1966b, pp. 150-151)

If TT statuses support the status quo, from where do attacks on the international order come? Theory and evidence suggest that such attacks will not come from the UU statuses, but from the disequilibrated -- the TU and UT -- statuses.⁵²

⁵¹An interesting question is whether the Status-Quo Axiom implies a "class status consciousness" (Landecker, 1963) among nations of similarly high or low rank. Much of the third world international movement appears to be based on a consciousness of low rank.

⁵²See Bendix (1952), Lenski (1954; 1956; 1966, pp. 87-88), Lipset and Bendix (1962, p. 268), Mitchell (1964), Segal (1969), Sorokin (1947, p. 290), and Zelditch and Anderson (1966, p. 264).

The Rank Behavior and Status-Quo Axioms lead to a Cooperation Theorem.

Theorem 6 (Cooperation Theorem): The higher the joint rank of nations i and j , the more cooperative their behavior. That is,

$$CO_{i+j} = -\alpha_{11}d_{i-j,1} - \alpha_{12}d_{i-j,2},$$

where CO_{i+j} is a behavior space cluster of highly intercorrelated cooperation vectors.

Cooperation is any associative dyadic behavior. For nations, this includes such "private" international behavior as tourists, student movements, migration, mail, exports, telegrams, and telephone calls; and such "public" international relations as treaties, economic and military aid, state visits, international conferences, international organization memberships, extensions of diplomatic recognition, and exchanges of ambassadors.

With cooperation thus defined, similar propositions are found in the literature. For instance, Galtung (1966b, p. 142) claims that the "higher the total rank of a pair . . ., the more interaction there will be between the units in the pair . . ., and the more associative the interaction."⁵³ And according to one of Galtung's (1966c) axioms (p. 164): "The lower the number of topdog links, the less associative the relation."

The Cooperation Theorem received empirical substantiation from many studies. Smoker (1966) found international organization co-memberships increasing with total status: These results strongly support the Galtung hypothesis." (p. 47) Gladitsch (1967) found world airline patterns are

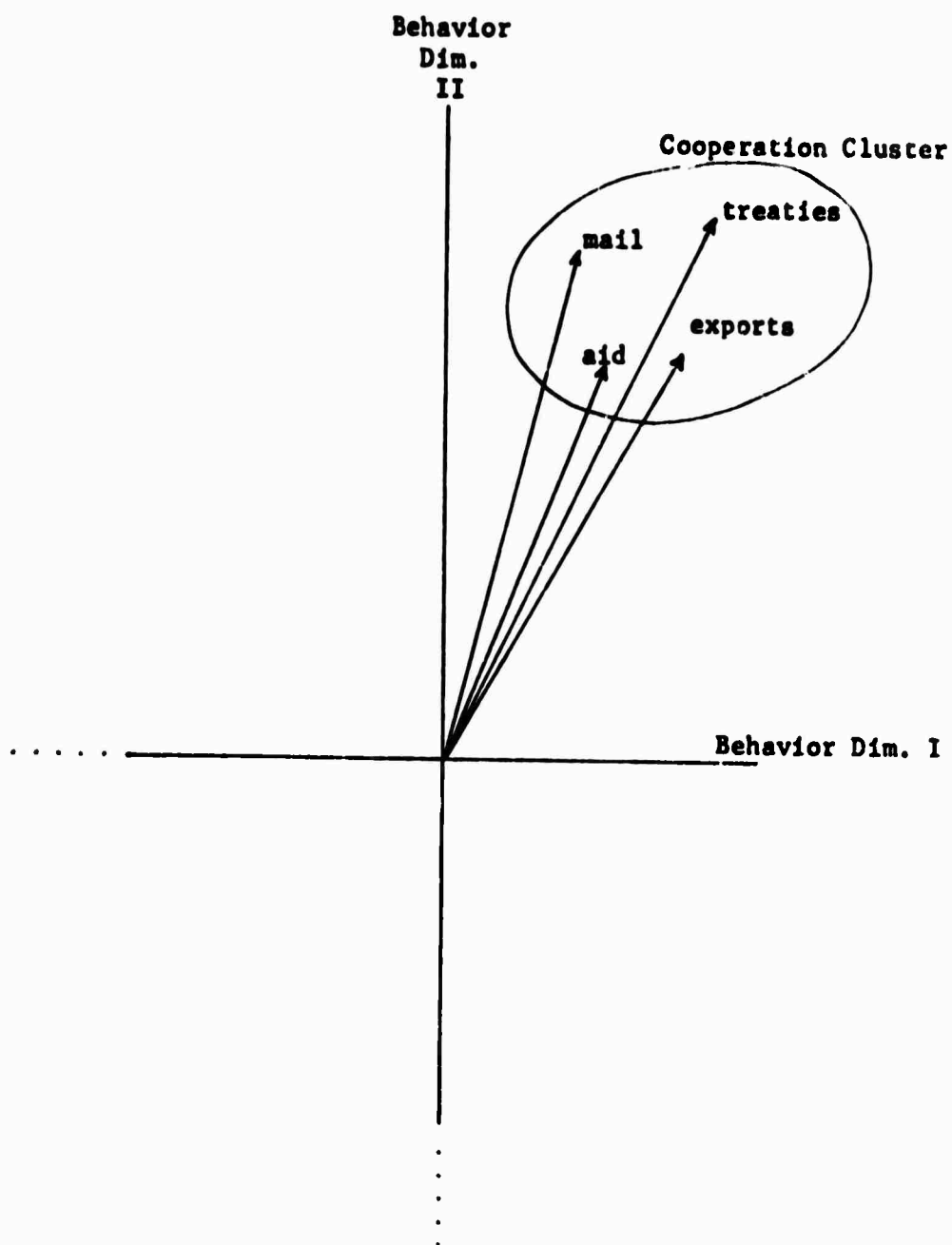
⁵³See also, Galtung (1966a, pp. 146 and 148).

based on total status: "the hypothesis of increasing interaction with increasing rank of the pair is confirmed for all systems at all four time points, with the exception of the British system in 1930." (p. 388)

British colonial and post-colonial international connections cause the exception. Galtung (1966a, p. 173n2) points to the increasing percentage of dyadic bilateral conventions (for avoiding double taxation among OECD members with increased total status). In a study of alliances, 1915-1939, Singer and Small (1966, p. 10) found that "almost all alliances during our 125-year period were accounted for by the central system. Moreover, a large proportion of them was also accounted for by the major powers, especially as regards the entente, or class III alliance. That is 30 of the 46 defense pacts in the total system, twenty-eight of the 41 neutrality or non-aggression pacts, and all of the ententes included at least one major power. And if we divide our results into nineteenth and twentieth century periods, the distributions are basically the same, but with the minor powers showing even less alliance activity in the earlier period."

Note that the theorem treats cooperative behavior as a cluster of interrelated dyadic actions (e.g., exports, tourists, treaties, mail, and migrants). This cluster is not a dimension, for reasons to be made clear later. What "cluster" means here is illustrated by Figure III for a hypothetical two dimensional behavior space and four cooperative actions. That is, the actions are highly intercorrelated and thus are spatially massed together.

Secondly, the theorem measures two nations' joint rank by their distance and not their status sum, as in the Joint Rank Definition. Mathematically, however, vectors define the same joint rank as the status



B-space

Figure III

sum within a positive linear transformation. The parameters weighting the distances are actor specific and determined by analyzing those dyads involving the same actor. Now, the status dimension's scores vary only by object nation, since the actor's (s_{11} and s_{12}) scores are constant.⁵⁴ Therefore, whether adding the object's scores to the actor's or subtracting them to get the distance vector, dyads involving the same actor have the same rank order on joint rank.

Generally, cases have equal rank positions on variables that are positive linearly dependent.⁵⁵ To illustrate, since centigrade and fahrenheit temperature scales are positive linearly dependent, ordering days by their temperature on each scale produces identical rank orderings. This does not imply that variables having the same rank order are necessarily linearly dependent. The example of x and $\log x$ (which are not linearly dependent) should dispel this notion. Thus, positive linearly dependent variables have equal rank orderings of cases while equal rank orderings do not necessarily imply that the data so ranked are linearly dependent.

More specifically regarding status, consider just the T and U statuses on the two status dimensions and all object nation (j) combinations for fixed statuses of the actor (i). And do this for the Joint Rank Definition and the Cooperation Theorem as in Table 1. The table shows the actor specific dyadic rankings to be the same for the definition and theorem. This provides an illustration and not a proof, however. The proof is as follows.

⁵⁴This aspect of Model II was first pointed out to me by Nils Gleditsch. On this, see Gleditsch (1970).

⁵⁵Variables X and Y are positive linearly dependent if $Y = \alpha X$, where α is any positive scalar.

Table 1*

Similarity Between Summed Statuses and Status Differences for Model II

Statuses		Dyadic Total Status Definition				Cooperation Theorem			
actor i	object j	$(S_{i1} + S_{j1}) + (S_{i2} + S_{j2}) = \text{Rank}$				$-(S_{i1} - S_{j1}) - (S_{i2} - S_{j2}) = \text{Rank}$			
TT	TT	2	2	4	1	0	0	0	1
	TU	2	1	3	1.5	0	-1	-1	1.5
	UT	1	2	3	1.5	-1	0	-1	1.5
	UU	1	1	2	4	-1	-1	-2	4
TU	TT	2	1	3	1	0	1	1	1
	TU	2	0	2	1.5	0	0	0	1.5
	UT	1	1	2	1.5	-1	1	0	1.5
	UU	1	0	1	4	-1	0	-1	4
UT	TT	1	2	3	1	1	0	1	1
	TU	1	1	2	1.5	1	-1	0	1.5
	UT	0	2	2	1.5	0	0	0	1.5
	UU	0	1	1	4	0	-1	-1	4
UU	TT	1	1	2	1	1	1	2	1
	TU	1	0	1	1.5	1	0	1	1.5
	UT	0	1	1	1.5	0	1	1	1.5
	UU	0	0	0	4	0	0	0	4

*To do the arithmetic indicated by the Definition and the theorem, T is given a value of 1 and U a value of 0.

If the Joint Rank Definition and Cooperation Theorem are equal within a positive linear transformation, then the following equation connecting them must hold:

$$\alpha_1(s_{11} + s_{j1}) + \alpha_2(s_{12} + s_{j2}) = a - \alpha_1(s_{11} - s_{j1}) - \alpha_2(s_{12} - s_{j2}), \quad (2)$$

where the Definition is given on the left of the equality, the theorem on the right, and "a" is a constant.⁵⁶ Since by Equation 1 the parameters are actor specific, α_1 and α_2 in the definition equal α_{11} and α_{12} of the theorem, respectively. For the theorem, therefore, the subscript 1 is omitted from the two parameters.

Now, 1's statuses are constant: the first status constant will be denoted i_1 and the second as i_2 . Then (2) can be rewritten

$$\alpha_1(i_1 + s_{j1}) + \alpha_2(i_2 + s_{j2}) = a - \alpha_1(i_1 - s_{j1}) - \alpha_2(i_2 - s_{j2}), \quad (3)$$

and,

$$\begin{aligned} \alpha_1 i_1 + \alpha_1 s_{j1} + \alpha_2 i_2 + \alpha_2 s_{j2} &= a - \alpha_1 i_1 + \alpha_1 s_{j1} - \alpha_2 i_2 + \alpha_2 s_{j2}, \\ (\alpha_1 i_1 + \alpha_1 i_1) + (\alpha_1 s_{j1} - \alpha_1 s_{j1}) + (\alpha_2 i_2 + \alpha_2 i_2) + (\alpha_2 s_{j2} - \alpha_2 s_{j2}) &= a, \\ 2\alpha_1 i_1 + 2\alpha_2 i_2 &= a. \end{aligned} \quad (4)$$

Since the terms on the left side (4) are all constants, the equality holds and the proof is concluded. An important implication is that status propositions based on the Joint Rank Definition (for the same actor) and those on the theorem entail exactly the same correlation.

The Cooperation Theorem concludes the incorporation of the rank concept into status-field theory, allowing us now to move on to status disequilibrium.

⁵⁶If $f(y)$ and $g(x)$ are two linearly dependent functions, then $f(y) = a + b g(x)$, where a and b are constants. Equation (1) does not include constant b , since for this equality $b = 1.0$.

STATUS DISEQUILIBRIUM AND BEHAVIOR

Axiom 8 (Dominant Status Axiom): Nations emphasize their dominant status and the others' subordinant status in interaction.

A nation having TU statuses, for example, will give more weight to T⁵⁷ when interacting with other nations, while de-emphasizing their U status.⁵⁸ This is intuitively reasonable, since high status is esteemed and nations desire to raise their status positions relative to other nations.⁵⁹ This leads to the following corollaries.

Corollary 5 (Dissonance Corollary): Status disequilibrium causes cognitive dissonance.

Consider the plight of the nation having unbalanced statuses. It emphasizes its dominant status in interaction, while other nations accentuate its low status. Thus, as perceived by the nation's elite, there is an imbalance between their nation's behavior, the behavior it receives, and

⁵⁷A "unit which has an inconsistent pattern will press for interaction in the system where it ranks highest." (Galtung, 1966b, pp. 159-160)

⁵⁸"The greater the incongruence of simultaneously perceived status factors of the given individual, the more insecure is his status. This means that others are likely to react to that individual as if he had a lower status, than the one he really enjoys." (Malewski, 1966, p. 305)

⁵⁹Hewitt (1970) coined the term "prestige bargaining" to define the process "in which each person seeks to gain the highest prestige possible in return for the least expenditure of recognition for the claims of others." (1970, p. 21) Status bargaining is the process defined here by the Dominant Status Axiom.

the behavior they feel it should receive.⁶⁰ This, as cognitive dissonance implies, produces a strain -- a frustration -- which can be relieved only by eliminating the dissonance.⁶¹

That status disequilibrium produces stress for the individual is Lenski's (1966, pp. 86-87) central argument. Empirical studies, however, do not consistently support this argument. "Despite a long history of great interest in the problem the available evidence only weakly confirms the central assumption that imbalanced ranks generate strain and efforts to restore balance. Contradictory results have been obtained, supposedly positive results are sometimes quite inconclusive, and it is often necessary to invent ad hoc principles to explain peculiar results in particular cases." (Zelditch and Anderson, 1966, p. 245)⁶²

⁶⁰"Relative deprivation" is a concept applicable here. This defines a person's (or nation's) self-evaluation of what it should have and what it does have compared to other individuals (or nations). However, an individual or nation can make the same comparison internally regarding its own statuses. Nation i believes nation j should base its behavior on i's high status; j, instead, bases it on i's low status. This imbalance between the status emphasized by j and what i thinks should be emphasized creates relative status deprivation. On this concept, see Landecker (1963, pp. 227-228).

⁶¹On the relationship between status disequilibrium and cognitive dissonance, see Sampson (1963).

⁶²"Despite the large number of studies relating to status inconsistency, firm evidence about its behavioral consequences is meagre." (Broom and Jones, 1970, p. 990)

Galtung (1968b, p. 286) suggests that the actual behavior -- aggressiveness -- may have a curvilinear relationship to status disequilibrium. If so, this would explain some of the empirically poor linear results.

The hypothesis that status disequilibrium causes stress which results in stress reducing behavior, has been successfully used to explain flying saucer sightings. "It is not, therefore, the uneducated credulous or the uninformed individual who reports saucers. Rather, it is the individual whose reward structure is out of line with his investment -- that is, the status-inconsistent white male who has the highest education ranking but a moderate or low income or occupation ranking." (Warren, 1970, p. 603)

Balance theory, as generalized by Cartwright and Harary (1956), provides a useful model of the Dissonance Corollary.⁶³ Let *i* be an actor with status disequilibrium, *j* the object, and *s_i* a status of *i*. For balance theory, the actor-object relationship is balanced if: their relationship and that of each to another object or individual is positive; or there is one positive relationship and two negative ones.⁶⁴

To apply Balance Theory, consider *i*'s status as the object to which *i* and *j* relate, and let their behavior be positive. Then we have the unbalanced situations Figure IV shows for *i*'s high or low status.

In Figure 4a, the low evaluation *i* has for its low status is shown by the negative valued line between *i* and *s_i*; *j*'s emphasis on *i*'s low status is shown by the positive valued line between *j* and *s_i*; and positive interaction between *i* and *j* is indicated by the positive valued line connecting *i* and *j*. Since there are two positive relationships and one negative, the situation is unbalanced and cognitive dissonance results. Similarly with Figure 4b, which shows *i*'s positive evaluation and *j*'s negative evaluation of *i*'s high status.

This cognitive dissonance motivates nation *i* to balance its behavior and status. To do so, *i* can alter its behavior toward *j* (to negative behavior),⁶⁵ shift *j*'s emphasis of *i*'s low status, or change its low status

⁶³Segal (1969, p. 354) uses balance theory to define stress for status inconsistencies.

⁶⁴Balance theory's meaning at the individual level is captured by the saying: "the friend of my friend is a friend, the enemy of my friend is an enemy, and the enemy of my enemy is a friend."

⁶⁵"Negative behavior" also comprises withdrawal from interaction, such as closing or demoting one's embassy, eliminating trade with and restricting or preventing travel to another nation.

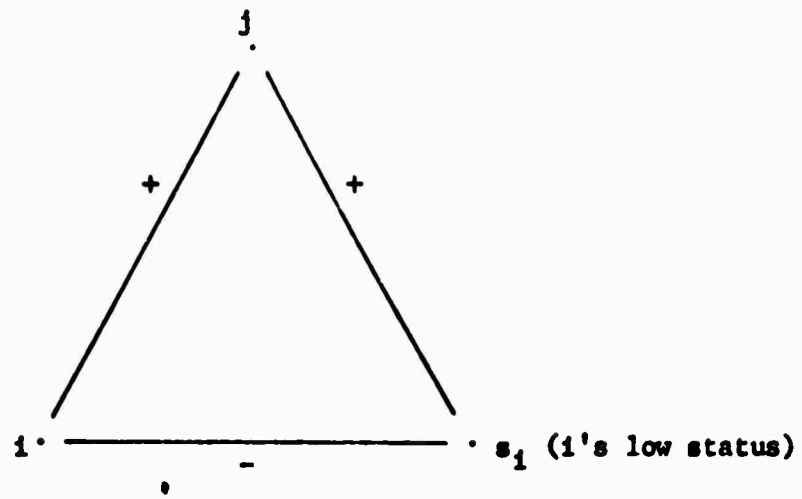


Figure 4a

Figure 4b

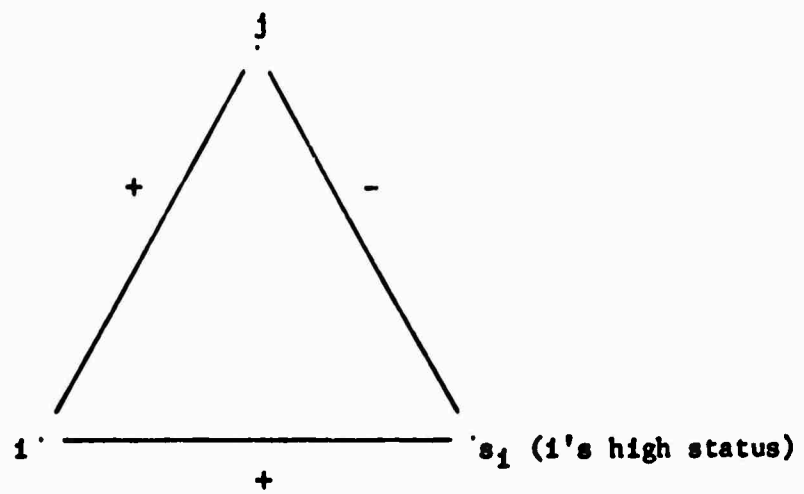


Figure IV

to a high or high to a low status. Status cannot be increased overnight (although a generation might change a nation's achieved status) and lowering it contradicts the Mobility Theorem (Theorem 4). Moreover, *i* does not control which of its statuses *j* accentuates. Practically, *i* is left with de-emphasizing its high status or turning negative its positive behavior to *j*. Later, I will postulate that the latter is selected.

Although the above points are couched in terms of the nation, they can penetrate to the nation elite level. Regarding a nation's status imbalance, for example, if the elite de-emphasizes the nation's status rather than changing its behavior, they jeopardize their legitimacy. For an ingredient of nationalism is the public's positive valuation of their nation compared to others. Ignoring their nation's high status is for the elite to ignore a pillar supporting this positive valuation. People identify with this high status and not with the nation's particular behavior. To give this behavior priority while subordinating high status, then, is to place in question the elite's right to act as the nation's policy makers and spokesmen.

To continue status-field theory's development:

Corollary 6 (Status Link Corollary): Common statuses between nations provide them with similar interests and a communication bridge.⁶⁶

Basic to much sociological and international relations thinking, this corollary ties into the "cross pressures" concept used by Coleman (1957), Dahrendorf (1959), Coser (1954), and Singer and Small (1968),⁶⁷

⁶⁶This corollary provides an explanation of Gleditsch's (1970a, p. 5) theorem: "Units will seek interaction with other units with whom they have high profile similarity."

⁶⁷"Many of the behaviors that political sociologists ascribe to 'cross pressures' may possibly be subsumed under the concept of status discrepancy." (Svalastoga, 1965, p. 66).

and is a cornerstone of Galtung's (1966b) theoretical work. The idea need not be labored here. Essentially, the corollary means that those sharing statuses have a common basis of discourse and understanding. A "Person who combines within himself a set of disparate statuses has a basis for interaction with others whose status constellations show a similar degree of internal disparity." (Landecker, 1963, p. 220)

Moreover, those sharing a status have a common interest regarding those not sharing it, as the poor versus the wealthy and the powerful versus the weak. Preserving or improving the common status provides a platform upon which those sharing the status can unite, to paraphrase Marx very loosely. "For the incumbent of a highly crystallized class status, the structured core of the class system is likely to be the immediate and salient environment. Here he will find others whose similar status characteristics provide him with a basis for intimate contacts. By the same token he has little or nothing in common with those whose respective statuses are strongly crystallized on either a higher or a lower status level than his. It may be assumed then, that the experience of clear-cut equalities with some and inequalities with others tend to evoke an acute consciousness of class." (Landecker, 1963, p. 220)

The last two corollaries lead to an additional one.

Corollary 7 (Uncertainty Corollary): The more two nations are status incongruent, the more their relationships are uncertain and the more incongruent their expectations of each other's behavior.

Past writers have suggested that status inconsistent labor under a variety of difficulties: unsatisfactory social relationships, unstable self-images, rewards out of line with aspirations, and social ambiguity. It may be that the basic

problem underlying all these is that of conflicting expectations. An individual's rank on a status dimension controls, in part, his expectations of others, his expectations of himself, and others' expectations of him. These expectations and the degree to which they are fulfilled control, in part, the individuals' image of himself. When a person holds high rank on one status dimension and low rank on another, the expectations (both those held by the individual and by others) mobilized by the rank positions will often be in conflict. (Jackson, 1962, pp. 469-470)

Berger, Cohen, and Zelditch define expectations as part of status (1966, p. 33). Then by their definition and from the Dominant Status Axiom, status disequilibrium necessarily leads to uncertainty.

Concerning the international relations framework previously discussed and sketched in Figure I, each nation has expectations about international behavior which enable their prediction. The better the predictions -- the better expectations conform to behavior -- the less the uncertainty. The Uncertainty Theorem identifies status differences as a source of uncertainty. "Status congruence is a condition of social certitude." (Homans, 1961, p. 250)⁶⁸

Status congruence operates in this way. If *i* and *j* have status congruences, as when both have UT statuses, then their common U and T statuses are positive links. These links make possible communication between *i* and *j* to resolve their differences (as resulting, for example, from the Dissonance Corollary). If *i* has UT (or TU) statuses while *j* has TU (or UT), however, then not only is there dissonance within *i* and *j* and incongruence in their mutual expectations, but there are no status links through which to resolve the incongruence. Indeed, these status differences mean *i* and *j* have different views, different interests, and different

⁶⁸See also Jackson (1962, p. 470).

grounds for understanding, all of which feed their mutual uncertainty and incongruence in expectations.

This expectation incongruence results from i viewing -- perceiving -- j through j's lower status, while j emphasizes its higher status behaviorally. Thus, the U.S. tends to view China as a poor backward nation and expects her to behave accordingly, such as by seeking development aid and certainly not by exhausting her resources on aid to other countries and massive defense expenditures. China, however, contrary to these expectations, has emphasized consistently her power in her foreign relations.

Sampson (1963) has published a thoughtful analysis of status congruence and expectations.⁶⁹ He treats "expectancy congruence" as the dominant concept, which subsumes status congruence. He argues that:

the conditions necessary for the continuation of the social order, which are also the conditions necessary for the continuation of the individual who is at all points dependent on that social order, include at minimum an anticipatory knowledge of the behavior which may be expected of the other participants in a given interaction situation. The organization of this anticipatory knowledge into a model of expectations about the social and physical environment, and the demands for an internally consistent and an externally valid model provide the basic framework for deriving predictions about individual and group behavior, and for explaining the already existing theory and research on the variable of status congruence.

Coordinating status position with expectation and status congruence with expectancy congruence permits one to discuss status equilibration or status congruence tendencies within individuals and within social structures in terms of the more general principle of expectancy congruence. The effects of low status congruence for the individual as well as for the group -- e.g., dissatisfaction, lowered productivity, lowered cohesiveness -- become a function of the problems

⁶⁹For an analysis building on Sampson's discussion of expectations, see Brandon (1965).

involved in coordinating one's behavior with the behavior of others in a situation which is characterized by multiple and conflicting expectations for one's and the other's behavior. (pp. 161-162)

Status disequilibrium and congruence definitions, corollaries, and theorems can now be behaviorally linked. First, an axiom (the last status-field theory axiom) relating achieved status and status congruence to cooperation will be given. Then, from this and the previous ground-work, theorems stating behavioral relationships mathematically will be derived.

Axiom 9 (Economic Development Status Axiom): The more similar in economic development status, the more nations are mutually cooperative.

Economic development is an achieved status dimension and common achievement is a strong international bond. Nations having similarly high development share much scientific and technological knowledge and ability, consumer demands and requirements, and socio-economic forces.⁷⁰ They have a common pride of achievement, a need and desire to interact, to exchange, to coordinate. The undeveloped nations cooperate with each other to pool resources for economic development and to coordinate their interests regarding the developed nations.

Common ascribed status on the power dimension, however, is not such a force for cooperation. Certainly, similar power status provides an interest and some basis for understanding and communication. However, the accidental and relatively unchangeable nature of national power weakens whatever support it gives for cooperation. Power is like race as an

⁷⁰"On the basis of the available evidence it is even possible to predict with some assurance that, as other countries industrialize, similar changes in the occupational structure and similar political trends are likely to occur." (Bendix, 1952, p. 361)

ascribed status in America. Race furnishes common interests (e.g., as against whites or blacks), but is a weak force per se towards cooperative behavior.

Thus, while interaction among some nations having similar power may exceed that between those differing in power, power similarity alone does not predict mutual cooperation. Actually, their mutual behavior may be almost wholly conflictual (as the U.S.S.R. and China). Unlike power status, economic development status does predict mutual cooperation.

Status theory's central point about status disequilibrium is that the resulting strain, frustration, and ambiguity cause conflict. At the individual level, this conflict could be intra-punitive, as with suicide. According to Galtung (1966b, p. 142) and Jackson (1962, pp. 476-477), whether the strain and frustration will produce inward or outward directed behavior depends on how the ascribed and achieved statuses balance. If ascribed status is lower than achieved, external aggressive behavior results; if achieved status is lower, intra-punitive behavior happens.

For nations, disequilibrium may be manifested as anti-status quo behavior, international disputes, and overt conflict behavior. Disequibrated nations are a pool of the conflict prone.⁷¹

To whom will this behavior be directed? If, for instance, the actor has UT statuses, what will be the object's status characteristics? Clear answers are not found in the status literature, for the focus is on the actor's status as impetus to action; there is little concern with the

⁷¹"The status inconsistency of nations is proposed as a possible explanation of aggressive behavior in the international system." (Midlarsky, 1968, pp. 19-20)

object. The literature notwithstanding, the axioms and theorems developed here provide an answer.

Simplifying as before, the object can have TT, TU, UT, and UU statuses. Now, by the Achievement Cooperation Axiom, the UT and TT statuses for actor and object provide one cooperative link (T), but the dissimilar first status can cause uncertainty for i (Uncertainty Corollary) and furnish a conflict path, i to j.

The UT and UU statuses are an analogous case, since there is also one link (although a less cooperative one) and also one source of ambiguity. The UT and TU statuses for actor and object is the worst combination. Not only is i disequibrated but so is j, producing a reinforcing conflict atmosphere (like two angry individuals bumping into each other). Moreover, no status links exist to moderate misunderstanding and uncertainty resulting from their dissimilar statuses.

"The basic idea is simply that two units, in casu two nations where one is high where the other is low and vice versa . . ., will tend to develop patterns of either withdrawal or conflict towards each other . . ."

(Galtung, 1966a, p. 174n17).⁷² Others (Lenski, 1956, p. 459; Malewski, 1966, p. 306) have claimed also that withdrawal and avoidance is very much a part of status disequilibrium, and this effect is most likely when i and j have incongruent statuses. As mentioned previously, foreign conflict behavior also comprises withdrawal and avoidance. For example, severing diplomatic relations -- withdrawal and avoidance behavior -- is officially recognized as an unfriendly act and is treated as such in international conflict studies.

⁷²See also Galtung (1966b, p. 143), where he puts his idea in propositional form, and Sorokin (1947, pp. 289-294).

Consider now nations jointly having UT statuses. With two status links existing and being similarly unbalanced, they should have the least conflict. They can unite to improve their status, for they have bases of understanding and common problems.

In summary, a UT actor will direct the most conflict behavior toward the TU object nation and the least toward a UT, with TT and UU falling in between. This ordering also results from computing i and j 's status congruence (when i has UT statuses) by Definition 6. Thus, the following theorem:

Theorem 7 (Conflict Theorem): Two nations' status incongruence is correlated with their mutual status dependent conflict behavior.

In their investigation of congruence and interpersonal conflict relationship in decision-making groups, Exline and Ziller (1959) concluded that significant "differences in the incidence of interpersonal conflict were, without exception associated with the predicted effects of status congruence." (p. 158)

At the nation level, Wallace (1970) has tested hypotheses relating status inconsistency and war. Measuring system level status inconsistency, he confirmed one hypothesis linking status inconsistency to war through its effect on creating intergovernmental organizations and on arms levels, and another hypothesis tying status inconsistency to alliance aggregation. Moreover, he found a direct (but weak) link between inconsistency and war. He concluded that his results "appear to confirm the importance of [status inconsistency] as a cause of war [and] they would also appear to confirm Johan Galtung's hypothesis, linking such differential changes in rank position to conflict via their tendency to produce status discrepancies." (p. 23)

East (1970, p. 114), also at the systemic level, found "that the more status discrepancy there is in the international system, the more interstate conflict will recur."

Working with East-West blocs, Galtung determined that "the essentially very simple theory put forward is both well confirmed and found to be fruitful. On the one hand, the predominant feature of the two blocs is rank-concordance; on the other, where rank concordance does not occur the theory predicts conflicts and these conflicts seem to be easily identifiable empirically. More particularly, the difference in degree of overt external conflict in the NATO and Warsaw blocs is predicted by the theory." (1966a, p. 154) Rank concordance for Galtung means (p. 146) identical statuses, as with the TT or UU.

From his status theory development and the disequilibrium concept, Galtung (1965, p. 375) draws policy conclusions. For a

resolution-mechanism to become institutionalized it is necessary that it is not too rank disequilibrating in its effects, or in other words that those who have high ranks in advance have a tendency to be favored by the mechanism one way or another Conversely, a difficulty with international law and international courts is that they threaten the international stratification system too much, partly because big powers commit disproportionately many international 'sins,' and partly because they often feel they are entitled to do so. The topdog must not be proved morally inferior too often, at least no more often than the underdog. Thus, the big powers are protected by veto clauses, Conally amendments, etc.

Before Galtung, Jackson, and Lenski elaborated the status disequilibrium concept and Sorokin published similar ideas using different terms. Sorokin defined a large group of similarly disequilibrated individuals as a disaffine strata (as the powerless rich or the powerful poor) who were

unstable, tending to decompose into an affine (balanced) multibonded (on multiple dimensions) strata.

Concrete forms of the innerly disaffine multibonded strata have been very diverse in human history. When such strata are small, the decomposition passes without notice. But when they are large, the process of their decomposition and replacement by the new affine multibonded strata becomes quite 'noisy' and ordinarily assumes the form of riots, revolts, conquests, revolutions, wars, or radical social reform movements. As a matter of fact there has hardly been any important historical internal revolution or reform which has not been due, to a large extent, to the existence of such 'abnormal' strata and has not consisted, to a large extent also, in the 'reaction of transposition.' Before any revolution or reform in a society there are always some such strata and when the smoke screen of revolutionary movement has passed, one ordinarily finds new affine strata. (Sorokin, 1947, p. 294)

Considering the Conflict Theorem directly, conflict behavior has the same quantitative meaning as cooperation in the Cooperation Theorem. That is, conflict behavior is not a behavior space dimension, but a cluster of conflict behaviors like threats, accusations, protests, and clashes, similar to the cooperation cluster Figure III shows.

Theorem 7 still is not specific enough, since only a correlation is posited. It does not detail the direction of correlation and how the statuses should be weighted. This will be done in the following two theorems.

Theorem 8 (Economically Developed Conflict Theorem): For economically developed actors, status dependent conflict behavior $CF_{i \rightarrow j} = \alpha_{i1}^* d_{i-j,1} - \alpha_{i2}^* d_{i-j,2}$.

Theorem 9 (Economically Underdeveloped Conflict Theorem): For economically underdeveloped actors, status dependent conflict behavior $CF_{i \rightarrow j} = -\alpha_{i1}^* d_{i-j,1} + \alpha_{i2}^* d_{i-j,2}$.

The asterisks on the parameters distinguish them from those of the Cooperation Theorem.

We need separate theorems because the incongruence (distance vectors) will order dyads differently depending on the actor's economic development status. For example, if i has UT statuses, then conflict and incongruence are positively correlated as Theorem 9 (above) postulates; if i has TU statuses, conflict and incongruences are negatively correlated. Two theorems are needed to separate this shift in correlation.

These relationships are illustrated in Table 2, which shows how object statuses rank for each theorem. For TT and TU actors conflict is directed most toward the UT object and least toward the TT; for UT and UU actors, conflict is most directed toward TU and least toward UT. The reason for this reversal has been discussed and Table 2 simply confirms that the theorems and status theory are consistent.

CONFLICT AND COOPERATION

Two theorems, perhaps the most important, remain. Theorems specifying the behavioral effects of joint rank and incongruence have been derived separately for cooperation and conflict. But these effects do not exist alternatively but simultaneously. Such dyadic behavior results from joint rank and incongruence, and requires a behavioral theorem combining both effects.

First, the Cooperation and Economically Developed Conflict Theorems will be specified algebraically,

$$CO_{i+j} = -\alpha_{11}d_{i-j,1} - \alpha_{12}d_{i-j,2}, \quad (5)$$

$$CF_{i+j} = \alpha_{11}^*d_{i-j,1} - \alpha_{12}^*d_{i-j,2}. \quad (6)$$

Keeping to status-field theory's linear world, assume that joint rank and incongruence effects combine additively. Then

Table 2*
Status Differences and Conflict Behavior

THEOREM 6

Statuses		Status Differences			Conflict
actor i	object j	$d_{i-j,1} - d_{i-j,2} =$			Rank
TT	TT	0	0	0	1.5
	TU	0	-1	-1	4
	UT	1	0	1	1
	UU	1	-1	0	1.5
TU	TT	0	1	1	1.5
	TU	0	0	0	4
	UT	1	1	2	1
	UU	1	0	1	1.5

THEOREM 7

i	j	$-d_{i-j,1} + d_{i-j,2} =$			Rank
UT	TT	1	0	1	1.5
	TU	1	1	2	1
	UT	0	0	0	4
	UU	0	1	1	1.5
UU	TT	1	-1	0	1.5
	TU	1	0	1	1
	UT	0	-1	-1	4
	UU	0	0	0	1.5

*To do the arithmetic indicated by the theorems, T is given a value of 1 and U a value of zero. For simplicity, the parameters in the theorems are assured equal to 1.

$$\begin{aligned} CO + CF &= -\alpha_1 d_1 - \alpha_2 d_2 + \alpha_1^* d_1 - \alpha_2^* d_2, \\ &= (\alpha_1^* - \alpha_1) d_1 - (\alpha_2^* + \alpha_2) d_2, \end{aligned} \quad (7)$$

omitting the actor-object subscripts.

Obviously, the parameters are crucial for evaluating (7). In status-field theory, attributes and behaviors are measured in standard scores, and the matrix equation for evaluating the parameters (and testing the status-field theory behavior-attribute linkage) is

$$WB = DA + U, \quad (8)$$

where W is the matrix of standardized projections of nation dyads (with the same actor) onto the behavior space dimensions (which are W 's columns), B is a parameter matrix weighting these dimensions, D is a matrix of standardized distances (distance vectors) for the dyads, A is the parameter matrix for the distances, and U is a least squares error matrix. Equation (8) has the same structure as the canonical analysis model, which then provides the technique for evaluating the equality and parameters (Rummel, 1969b).

Since W and D consist of standard scores by column, if W and D are also assumed orthogonal by column, the parameters of immediate concern here will be the product moment correlations of CO and CF with the status distances. However, although D cannot be assumed to be orthogonal, it can be assumed to be sufficiently close to orthonality for practical purposes.

Therefore, assume the parameters in (7) are the correlations of status distances with cooperation and conflict. Then, previous status-field

theory theorems imply these are positive correlations: the parameters are equal to or between 0 and 1.0.⁷³

Moreover, the previous discussion about the theorems implies that the weights do not differ greatly: both α_1 and α_2 play a strong role in explaining cooperation or conflict behavior. And since they are all correlations, the four parameters must be fairly close in value.

Therefore, $(\alpha_1^* - \alpha_1)$ should be near zero while $(\alpha_2 + \alpha_2^*)$ is near unity. The conclusion is that almost all the $(CO + CF)$ variance must be explained by d_2 , and for practical purposes $(\alpha_1^* - \alpha_1) = 0$ in (7). This complex but necessary argument yields the following theorem.

Theorem 10 (Economically Developed Status Behavior Theorem): The status dependent cooperation and conflict behavior of economically developed nations to others is a function of their power incongruence, that is $CO_{1 \rightarrow j} + CF_{1 \rightarrow j} = -\gamma_2 d_2$, where CO is nation 1 to j cooperative behavior, CF is conflict behavior, γ_2 is a positive parameter equalling $(\alpha_2^* + \alpha_2)$, and d_2 is the 1- j incongruence (distance vector) on the power status.

Power congruence is for the high power nations, such as the U.S.S.R., the U.S., and China, the same as power parity. And the greater their power parity, the more their joint conflict and cooperative status dependent behavior. From a long and logical interconnection of status-field theory axioms, definitions, and theorems, I end by linking power to international relations behavior. I will not labor this result here, except to note that the theorem allows status-field theory to be related to the highly important traditional power based literature.

⁷³This assumption is required to maintain the direction of relationship defined by the parameters in the theorems. For example, correlations range from -1.00 to +1.00. If we then equate α in the equation $Y = -\alpha X$ to a correlation, r , then if r is negative $Y = -(-r)X = rX$, a reversal of relationship.

Central to international relations is the distribution of power, and attempts to change it often caused violent conflict. Apropos this point, Goffman (1957) argues (for individuals) that preference for changing the power distribution is directly related to status inconsistency and supports this with evidence. If this argument also holds internationally, then it explains the link between a nation's status inconsistency and its conflict confirmed by Galtung (1966a), Wallace (1970), and East (1970). That is, status inconsistencies attempt to alter the power distribution, causing conflict. This accords with Exline and Ziller's suggestion "that status incongruity arouses concerns about power that lead to emotionally-based interpersonal conflict." (1959, p. 159)

Theorem 10 only refers to economically developed nations. Through reasoning similar to that for Theorem 10, Theorem 11 results.

Theorem 11 (Economically Underdeveloped Status Behavior Theorem):

The status dependent cooperation and conflict behavior of economically underdeveloped nations to others is a function of their economic development incongruence, that is $CO_{i \rightarrow j} + CF_{i \rightarrow j} = -\gamma_1 d_1$, where CO is nation i to j cooperative behavior, CF is conflict behavior, γ_1 is a positive parameter equalling $(\alpha_1^* + \alpha_1)$, and d_1 is the i - j incongruence (distance vector) on the economic development status.

One final comment on these theorems. Since cooperative and conflict behavior are distinct clusters of behavior, are they separate behavioral dimensions? The answer is no. CO and CF , though statistically independent, may have high positive projections (loadings) on the same behavior dimension (the sum $CO + CF$ implies this). Figure V illustrates, geometrically, how this is possible. Two nearly orthogonal (statistically independent) clusters

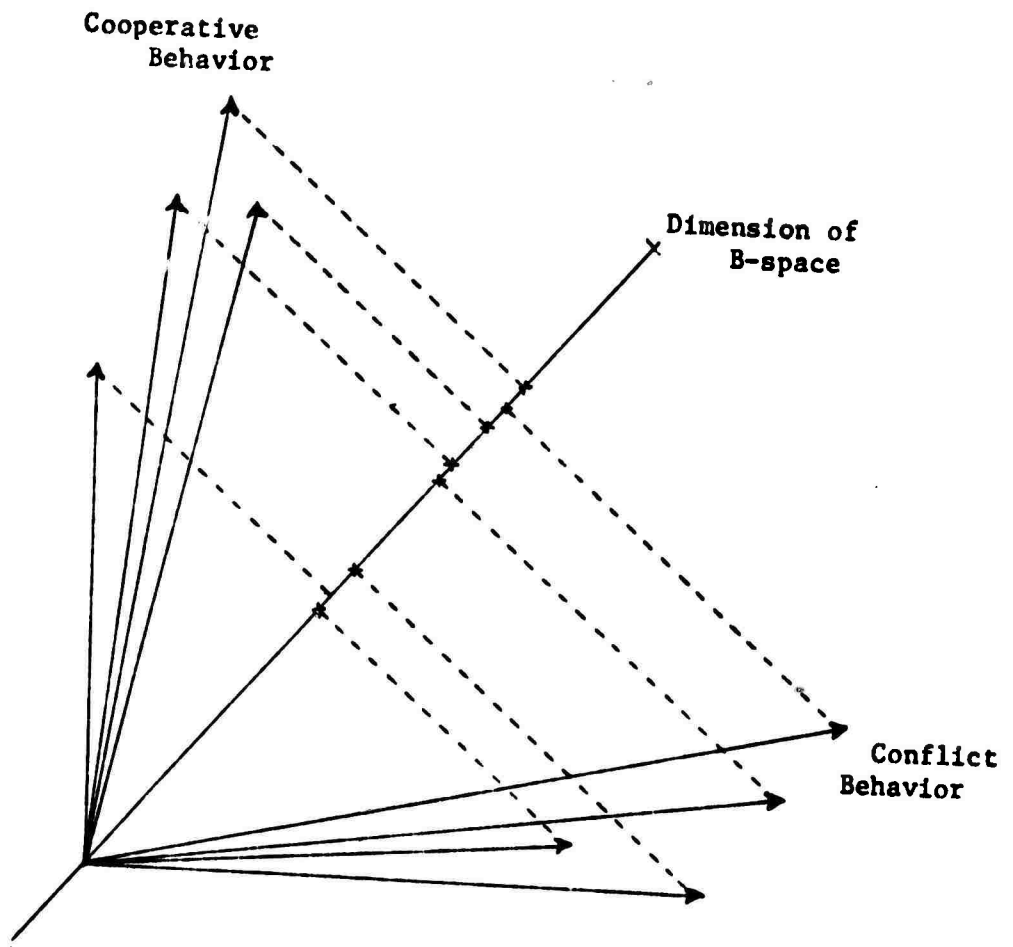


Figure V

are shown which, despite their independence, have similar projections onto the behavior dimension. That is, the dimension = $CO + CF$, with CO and CF weighted about equally.

STATUS DYNAMICS

This concludes incorporating status, rank, disequilibrium, and status behavior into field theory. In the development, the dynamic status implications of the Attribute Distance Axiom have been ignored.

There are many dynamic implications of the Attribute Distance Axiom that cannot be discussed here.⁷⁴ Two points should be made, however. First, the axiom states that behavior at time t results from attribute distances at the same time. Status-field theory recognizes no time lags, per the simultaneity assumption.

Second, some attribute distances measure national social time differences. That is, some attribute dimensions define the durational aspect of the social-time space. Now, nations have projections on these social-time dimensions and the differences between these projections constitute their social time distances. Moreover, these distances may be non-zero for the same calendar time. Two nations may have different social times and this difference will be a force affecting their behavior.

The following dynamic theorem is based on the Attribute Distance Axiom.

Theorem 12 (Status Time Theorem): The status dependent behavior of nation i to j at time t is linearly dependent on their status distance vectors at time t .

⁷⁴See Rummel (1970c) which develops this axiom.

Figure VI illustrates Theorem 12. Since the function and the parameters are time invariant, Theorem 12 expresses the dependence of the actor's changing status distances, on their status mobility.⁷⁵

The final theorem will simply express the complete dependence of status and non-status behavior through time on attributes through time.

Theorem 13 (Behavior Dependence Theorem): Behavior space is a subspace of attribute space.

Attribute space completely contains behavior space and the behavior space dimensionality is less than or equal to that of attribute space. This implies that all behavior space dimensions (including status behavior dimensions) are a linear combination of attribute dimensions: the bases of behavior space are subsets of those of attribute space.

Behavior through time is relative and interdependent, and this interdependent behavioral net is itself dependent on changing nation differences. Now, the Behavior Dependence Theorem asserts that status behavior, as woven into this complex behavioral net, is dependent on changing status dimensions. The relationship between status behavior and status cannot be understood in abstract from other behavior and attribute interrelationships, any more than the relationship between a car's electrical system and its movement can be understood without considering its mechanical systems, all their interrelationships, and their contribution to the vehicle's movement.

⁷⁵Still among the best articles on status mobility and its effects is Blau's (1956). His "central hypothesis" is "that the dilemmas faced by mobile individuals in their interpersonal relations inhibit social integration and are responsible for many aspects of their attitudes and conduct." (p. 290)

Magnitude

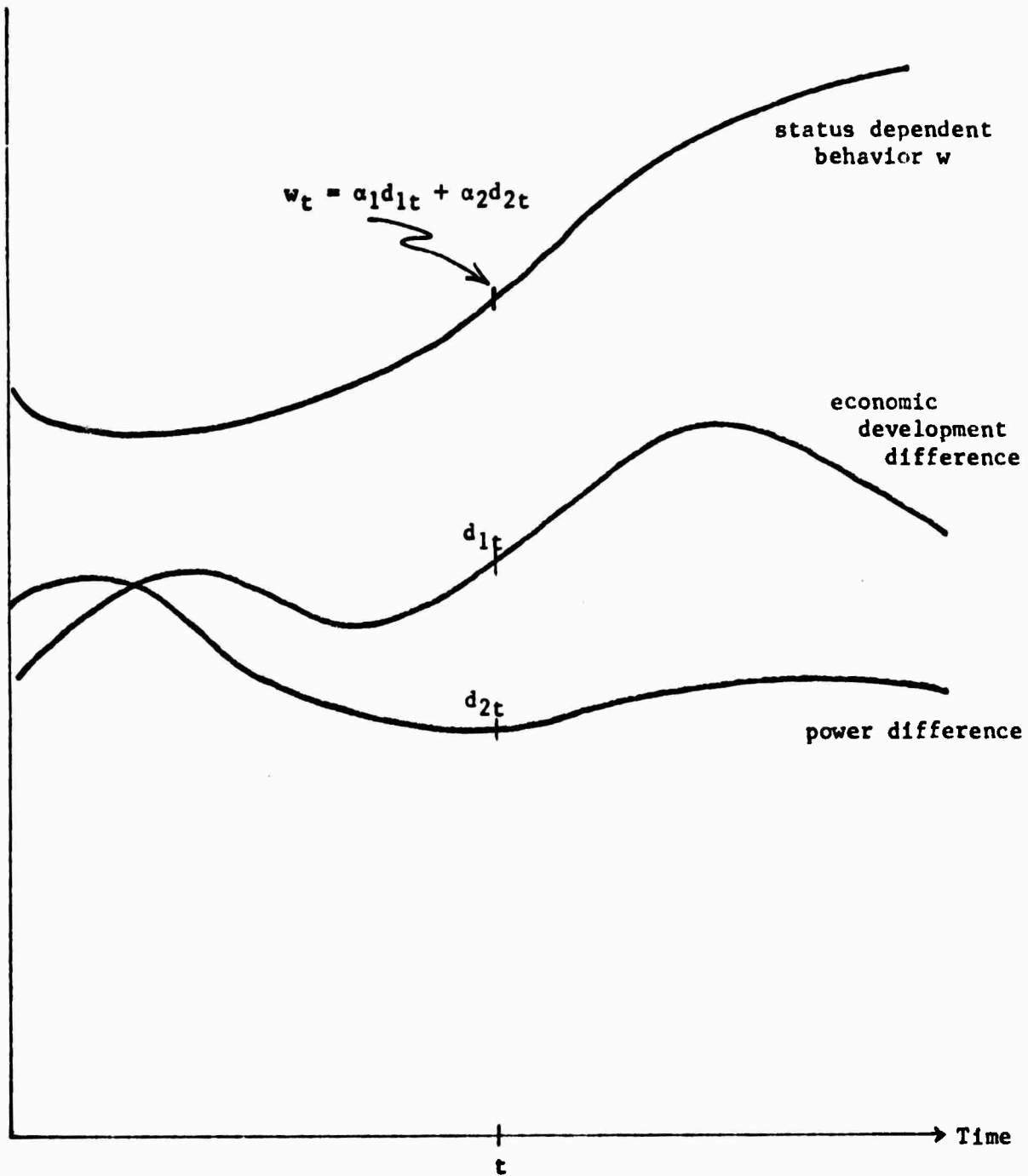


Figure VI

THE END OF A BEGINNING

More status propositions could be included within status-field theory, but for the moment the two major concepts -- rank and status disequilibrium -- should suffice.

Status, as developed here, fits within the framework of international relations sketched by Figure I in the following manner. Along with other kinds of differences and similarities, status heterogeneity explains behavior. Statuses generate and channel nation interaction, provide and interpret the issues that consequently arise.

Relative status and rank have two basic behavioral results. First, different dyadic statuses cause international conflict. While this conflict itself can disrupt international expectations, create uncertainty and breed miscalculation, status difference (incongruence) itself hampers evolving coherent expectations. It creates uncertainty nurturing conflict.

Second, status also has cooperative consequences. High rank and relative status similarity underlie cooperative behavior. Similar statuses support treaties and alliances and undergird their credibility. In this way statuses also provide the realistic basis of international accommodations and expectations.

To summarize this paper's major points: Two theories, among others, currently invigorate theoretical and empirical international relations research. One is field theory, based on the idea that nation similarities and differences cause international behavior. The other is status theory, derived largely from the sociological status literature, which argues that international behavior is caused by status rank and disequilibrium.

Both theories ground behavior on nation attributes, thus providing an avenue for subsuming status theory within field theory.⁷⁶ First, among the many dimensions spanning nation attributes, two -- economic development and power basis -- can be defined as status dimensions. These position nations on their relative statuses in field theory's attribute space.

Second, status theory's two key concepts -- rank and status disequilibrium -- can be defined for nations by status dimensions and, most importantly, for dyads by nation status differences (distance vectors). This latter definition is the implement used to create status-field theory, since, for field theory, distance vectors are the forces toward behavior.

Finally, status and field theory can be combined to say that status dependent, dyadic, cooperative, and conflict behavior of economically developed nations is inversely related to their power differences; and that such behavior of economically underdeveloped nations is inversely related to their economic development differences.

The development of a status-field theory enriches both theories. Status theory is given a mathematical representation with clear functions and tests. Moreover, status-field theory explicitly considers status and status behavior as being related to other behavior and attributes.

⁷⁶Field theory embodies all behavior and attributes, of which status behavior and attributes are subsets. Therefore, field theory cannot be subsumed under status theory. Trying to do so is the same as attempting to account linearly for all the variation on two linearly independent variables by one, which is mathematically impossible.

For field theory, status-field theory adds substantive richness and defines the direction of relationship between two attribute dimensions and behavior. This makes salient for field theory extensive sociological literature and includes under one umbrella two empirically active and systematic international relations theories.

APPENDIX

Axiom 1 (Status-field Axiom): International relations is a field consisting of all nations, the attributes and interactions and their complex inter-relationships through time.

Axiom 2 (Attribute-behavior Space Axiom): The international field comprises a Euclidean attribute space defining all the attributes of nations and a Euclidean behavior space defining all nation dyadic interactions.

Theorem 1 (Finite Dimensionality Theorem): A finite set of linearly independent dimensions generate attribute and behavior spaces.

Axiom 3 (Stratification Axiom): International relations is a stratified social system.

Theorem 2 (Status Theorem): Status dimensions are a subset of attribute space dimensions.

Definition 1 (Status Definition): A status dimension (of attribute space) is a continuum involving virtually universal international consensus as to which end is better or more desirable. An ascribed status dimension is one on which nations cannot alter significantly, their relative status in a generation. An achieved status dimension is one on which nations can so alter their location. A nation's rank is its total status on the status dimensions.

Corollary 1 (Status Measurement Corollary): Status is a continuous variable.

Definition 2 (Status Dimensions Definition): The international status dimensions are economic development and power.

Theorem 3 (Position Theorem): Nations are located as vectors in attribute space and as vectors of nation dyads in behavior space.

Corollary 2 (Status Position Corollary): An attribute space position defines a nation's relative status.

Theorem 4 (Mobility Theorem): Nations desire upward mobility.

Theorem 5 (Equilibration Theorem): Nations having unbalanced statuses desire to balance them.

Corollary 3 (Elite Corollary): A nation's elite identify with their rank and status configuration.

Definition 3 (Rank Definition): The rank of i is $\alpha_1 s_{i1} + \alpha_2 s_{i2}$, where α_1 and α_2 are positive parameters and s_{i1} and s_{i2} are nation i 's economic development and power statuses, respectively.

Definition 4 (Joint Rank Definition): The joint rank of two nations, i and j , is $\alpha_1(s_{i1} + s_{j1}) + \alpha_2(s_{i2} + s_{j2})$, where α_1 and α_2 are the positive parameters in Definition 3.

Definition 5 (Status Disequilibrium Definition): A nation's status disequilibrium is $\pm \alpha_1 s_{i1} \mp \alpha_2 s_{i2}$, where α_1 and α_2 have different signs.

Definition 6 (Status Incongruence Definition): The status incongruence of two nations i and j is $\pm \alpha_1(s_{i1} - s_{j1}) + \alpha_2(s_{i2} - s_{j2})$, where α_1 and α_2 have different signs.

Corollary 4 (Status Distance Corollary): Status incongruence between nations i and j is the distance vector between their status vectors on a status dimension.

Axiom 4 (Attribute Distance Axiom): Between nation attribute distances at a particular time are social forces determining dyadic behavior at that time.

Axiom 5 (Status Dependence Axiom): Some behavior dimensions are linearly dependent on status.

Definition 7 (Status Role Definition): The status dependent behavior dimensions define a nation's status role.

Definition 8 (Status Behavior Definition): The status dependent behavior dimensions delineate status behavior.

Axiom 6 (Rank Behavior Axiom): Status behavior is directed toward higher ranking nations and the greater a nation's rank, the more its status behavior.

Axiom 7 (Status-Quo Axiom): High rank nations support the current international order.

Theorem 6 (Cooperation Theorem): The higher the joint rank of nations i and j , the more cooperative their behavior. That is, $CO_{i+j} = -\alpha_{i1}d_{i-j,1} - \alpha_{i2}d_{i-j,2}$, where CO_{i+j} is a behavior space cluster of highly intercorrelated cooperation vectors.

Axiom 8 (Dominant Status Axiom): Nations emphasize their dominant status and the others' subordinated statuses in interaction.

Corollary 5 (Dissonance Corollary): Status disequilibrium causes cognitive dissonance.

Corollary 6 (Status Link Corollary): Common statuses between nations provide them with similar interests and a communication bridge.

Corollary 7 (Uncertainty Corollary): The more two nations are status incongruent, the more their relationships are uncertain and the more incongruent their expectations of each other's behavior.

Axiom 9 (Economic Development Status Axiom): The more similar in economic development status, the more nations are mutually cooperative.

Theorem 7 (Conflict Theorem): Two nations' status incongruence is correlated with their mutual status dependent conflict behavior.

Theorem 8 (Economically Developed Conflict Theorem): For economically developed actors, status dependent conflict behavior $CF_{i \rightarrow j} = \alpha_{i1}^* d_{i-j,1} - \alpha_{i2}^* d_{i-j,2}$.

Theorem 9 (Economically Underdeveloped Conflict Theorem): For economically underdeveloped actors, status dependent conflict behavior $CF_{i \rightarrow j} = -\alpha_{i1}^* d_{i-j,1} + \alpha_{i2}^* d_{i-j,2}$.

Theorem 10 (Economically Developed Status Behavior Theorem): The status dependent cooperation and conflict behavior of high economically developed nations to others is a function of their

power incongruence, that is $CO_{1 \rightarrow j} + CF_{1 \rightarrow j} = -\gamma_2 d_2$, where CO is nation 1 to j cooperative behavior, CF is conflict behavior, γ_2 is a positive parameter equalling $(\alpha_2^* + \alpha_2)$, and d_2 is the 1- j incongruence (distance vector) on the power status.

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